THE AUTOMOBILE

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CHICAGO-ST. PAUL TOURISTS IN TWIN CITIES.

From Our Own Correspondent.

ST. PAUL, July 7.—The first week of the St. Paul automobile carnival closed under auspicious circumstances. After driving 500 miles through the rain and mud, the tourists who made the trip from Chicago to St. Paul got a glimpse of the sun o'clock Tuesday afternoon, as scheduled. For this reason, the races which were to be held Thursday and Saturday, were postponed until Saturday and Monday. Louis Chevrolet with his Fiat, Webb Jay with the White steamer, Barney Oldfield with Chicago reached St. Paul without serious mishaps. Some of the others were shipped the latter part of the journey, and a few had so many breakdowns that they were shipped back to Chicago. The roads were a mass of mud and mire from start to

PARADE OF ABOUT 300 LOCAL AND VISITORS' DECORATED AUTOMOBILES IN ST. PAUL DURING THE CARNIVAL.

when they arrived at the Saintly City, and from then on the weather continued fair.

On account of the rain, which fell Sunday, Monday and Tuesday, July 2, 3 and 4, the main body of the tourists were delayed from one to two days, arriving Wednesday and Thursday instead of at 3

his *Green Dragon*, and Earl Kiser with the Winton *Bullet*, arrived Thursday, ready for the first day's races, but the track at Hamline was then in too poor condition.

Despite the fact that the rain fell most of the time during the trip, not less than a dozen of the thirty cars that started from

finish, and those who managed to pull through feel that their cars have stood a severe test.

Automobilists in Duluth, Superior, Northern Minnesota and the Dakotas took less chances, and shipped their cars by rail. Several cars were also shipped from St. Louis,

Winnipeg and other points in the Northwest.

PARADE ON THURSDAY.

The parade was held Thursday afternoon, according to schedule. About 300 cars were in line, including the mud-covered machines that had made the trip from Chicago and points in Iowa and Illinois. The cars assembled at Rice Park at 2 o'clock in the afternoon, and, headed by a platoon of police and Arthur Gardner, with the Rambler that piloted the tourists from Chicago, the procession passed through the business streets of St. Paul before admiring thousands who lined the sidewalks and filled the windows of the office buildings. The line of parade was along Washington street to Third, to Broadway, up Sixth to Cedar, up Seventh to Wabasha, out Wabasha to University avenue, along University to Dale, and out to Como Park, one of the most beautiful resorts of the Northwest.

The cars were tastily draped with streamers of royal purple and gold, the carnival colors. One car attracted attention by a handsome rosette of purple and gold fastened on the radiator in front, while another enthusiastic automobilist had his car draped with silk ribbons. The tourists who pushed through in the mud felt so proud of their achievement that they ran their machines mud-bespattered, as they had arrived.

The police and bands parted company with the automobilists at Cedar street, and were at the pavilion at Como Park, ready to give the tourists a reception. With Secretary B. A. Ledy, of the St. Paul Automobile Club, as scout, the procession started for the city by way of Dale street and Summit avenue, to historic Fort Snelling, and then back to St. Paul.

The banquet, which was to be held at the Ryan Hotel Wednesday evening, was postponed until Saturday evening, and an informal reception was held Wednesday evening at the Commercial Club instead. The committee in charge was: Lee Hall, chairman; L. G. Hoffman, J. Harry Lewis, Grant Van Sant, W. R. Sachse and G. S. Loftus. Music was furnished by the St. Paul Postoffice Band, and refreshments were served.

WHITE FIRST TO ARRIVE.

Walter C. White, of Cleveland, O., driving a 15-horsepower White steamer, and accompanied by R. H. Johnston, of New York, was the first of the automobilists that made the trip through the rain from Chicago to arrive at St. Paul. Mr. White left the Auditorium Annex in Chicago at 6.19 o'clock Saturday morning, July 1, and registered at the Ryan Hotel in St. Paul at 7.27 o'clock Monday evening, July 3. The odometer showed that his car had covered 499 miles. The time spent on the road, not deducting time for stops, was 43 hours 36 minutes.

Mr. White's trip was made without accident or breakdowns of any kind, and he reports encountering real bad roads when he arrived at Freeport, Ill., Saturday afternoon, where he began to overhaul many of the tourists of the main division, which left Chicago Friday. The road grew worse, and when near Dubuque it resembled the bed of a creek more than a public highway. He arrived at Dubuque at 9.45 Saturday night, and left at 5.40 o'clock Sunday morning. Had fairly good roads until he arrived at Waverly, Ia., at 12.30 o'clock P.M. During Sunday afternoon he had to contend with mud and heavy grades, arriving at Austin, Minn., at 6.30 o'clock. It was raining hard when he left Austin Monday morning, and the roads continued bad until Faribault was reached at 1.30 o'clock in the afternoon, but from Faribault to St. Paul fairly good time was made.

A White steamer, driven by H. K. Sheriden, C. R. Meisner and W. S. Huey, of Chicago, was the second car to reach St. Paul. The tourists registered at the Ryan Hotel at 10.30 o'clock Wednesday morning, having left Chicago in the main division Friday. at 10.37 o'clock Wednesday, seven minutes later, the pilot car, a Rambler, containing Arthur Gardner, F. W. Van Sicklen and Warren French, arrived at the hotel, and at 11.27 a Lambert machine, driven by J. W. Lambert and E. V. Adland, arrived.

CONTINUOUS RAIN EN ROUTE.

"It was really an endurance run," said Mr. Gardner. "It was purely a matter of physical endurance. After we got to Rockford, Ill., we found one long stretch of mud all the way. It rained almost continually, and the mud became so sticky that the automobile wheels resembled large engine drivewheels. We had no accidents that amounted to anything."

A Pierce Arrow, driven by Charles P. Joy, of St. Paul, who was accompanied by Allan I. Blanchard, R. H. Tauritz and Paul Hoffman, was the first of the non-stop division to reach St. Paul. The party left Chicago at 2.05 A.M. Monday and registered at the Ryan Hotel at 4.10 Wednesday afternoon, being 62 hours and 5 minutes on the road. Mr. Joy reports having been obliged to stop the engine seven times in order to let teams pass. He passed through Rockford, Ill., at 6.20 o'clock Monday morning, Dubuque, Ia., at 4.05 P.M., Charles City, Ia., at 12.10 P.M. Tuesday, and Austin, Minn., at 7 o'clock Tuesday night. The occupants alighted at Independence, Ia., Monday night to get a cup of coffee, and at Charles City one of the party jumped out to get a few sandwiches for the crew. Mr. Joy states that the car made the trip without other stops, and that there were no accidents.

The second car of the non-stop division to arrive, a Jackson, came in at 5.47, having been on the road 63 hours and 42 minutes. The party consisted of F. L. Holmes, A. G. McPherson, Charles G. Hammel and E. F. Scheuffler.

"We were not forced to stop on the road," said Mr. McPherson. "A farmwagon in Iowa ran into us once and broke the front spring, but we were not required to stop the engine on this account, and we traveled 125 miles with a wooden block in place of the spring. We had the spring repaired at Waterloo. At one time one of the men took out a spark plug and put in a new one without stopping the engine."

The third car of the non-stop division, a Buick machine, failed to get through to St. Paul. The machine broke down in Iowa and was shipped back to Chicago.

WOMEN ENJOY TOUR.

Misses Anna Andrews and Louella Conly, of Chicago, accompanied by J. S. Patterson, of Chicago, and L. E. French, of Lansing, arrived in a Reo at 6.30 o'clock Wednesday. In spite of the rough roads, the women were much pleased with the trip.

"I have half a mind to go back to Chicago the same way," said Miss Andrews on arriving at St. Paul. If I never have a vacation the rest of my life, this trip will make up for it. We arrived at Dubuque at the same time as the pilot car, although it started three hours ahead of us at Rockford. Going into Austin, we ran neck and neck with the White steamer containing Messrs. Sheriden and Huey; we arrived at the hotel together, and one of them took the register as I held the pen. We compromised by mixing up the party on the register."

The next arrival from Chicago was a Knox containing A. L. Moore and F. N. Moore, of Chicago, who started from Chicago with the main division of tourists Friday and reached St. Paul at 7.38 P.M. Wednesday.

A Packard containing F. J. Pardee, O. S. Tweedy, J. P. Van Doozer and J. Fowler, of Chicago, arrived at 7 A.M. Thursday. G. E. Pickup and Ray Farwell arrived in an Adams-Farwell at 1.51 P.M. Thursday, in time for the parade in the afternoon. Car No. 37, a White steamer, containing M. K. Weems, Mrs. Weems, Mrs. L. B. Bartlett and Thomas D. Gardner, of Quincy, who toured from Chicago, registered at the Ryan Hotel at 5.15 P.M. Thursday, and thirty-five minutes later Mr. and Mrs. Edward Pardee, of South Chicago, reached the hotel in a Knox machine.

Secretary Robert W. Spangler, of the Chicago Automobile Club, accompanied by Mrs. Spangler, Miss Mabel Shoults and Charles Kempton, arrived in a Knox car at 11.55 o'clock Thursday night.

FINISH JOURNEY BY RAIL.

Several cars made the trip part way, and were shipped the rest of the way to St. Paul. F. M. Creelman, of Chicago, accompanied by Mrs. Creelman, Miss Helen Creelman and Mr. C. A. Goode, drove a Thomas car as far as Osage, Ia., from which point they took the train to St. Paul, arriving Tuesday. Dr. A. C. Lee, of Des Moines, Ia., accompanied by Miss Jessie Manatrey, Richard O'Brien and L. E. Lamb, drove a 30-horespower Pope-Toledo from Des Moines to Osage, by way of Sidney and

Independence, 410 miles, and shipped the car from Osage.

YACHT RACES FRIDAY.

The tourists were too tired Friday to get up early and ride to Forest Lake on a fishing excursion, as planned, but spent all day at White Bear Lake instead. The cars made the run from the Ryan Hotel to White Bear in one hour, and on arriving at the resort boarded the steamer *Charlotte* for a trip on the lake. The visitors afterwards returned to the Lake Shore pavilion, where luncheon was served. In the afternoon they boarded the steamer again for Dellwood to witness the yacht races for trophies offered by the St. Paul Yacht Club.

Some of the tourists followed the races in the steamer; others accepted the invitation of the White Bear sailors to ride in the yachts, and still others took trips on launches. Dinner was served at the Lake Shore pavilion at 7 o'clock, the waiters being decorated with purple and gold, the colors of the Chicago Automobile Club. After dinner the guests were entertained by the St. Paul Post Office band on the veranda of the pavilion, and about 8 o'clock adjourned to the second floor, where dancing was indulged in until midnight.

The White Bear regatta was most successful and furnished enjoyable entertainment for the tourists. Fifteen boats entered the contest. In Class A, *Cambria,* sailed by Evan Rees, won a race against five competitors. The *Barracouta,* sailed by M. W. Griggs, won in Class B, in which there were nine entries.

Views in Minneapolis.

Special Correspondence.

MINNEAPOLIS, July 8.—After their long trip over the muddy roads of Minnesota and Iowa, the St. Paul tourists were able to appreciate the delightful contrast offered by the well-paved streets of this city and the excellent macadamized drives radiating from both the twin cities of the Northwest. St. Paul and Minneapolis are in the center of a region of great natural beauty that is rich in legendary lore and which has furnished inspiration to other poets as well as to the immortal Longfellow, whose "Hiawatha" made famous the laughing waters of Minnehaha Falls and the cool depths of the dell below them. Only a year ago a new drive was built along the edge of the gorge for four miles on the Minneapolis side. The falls had, of course, to be visited by the tourists, and incidentally, on the way, historic old Fort Snelling, nestling high upon the top of the precipitous bluff at the fork of the Mississippi and Minnesota rivers, and including in its extensive grounds the old Round Tower erected as the original fort in 1812.

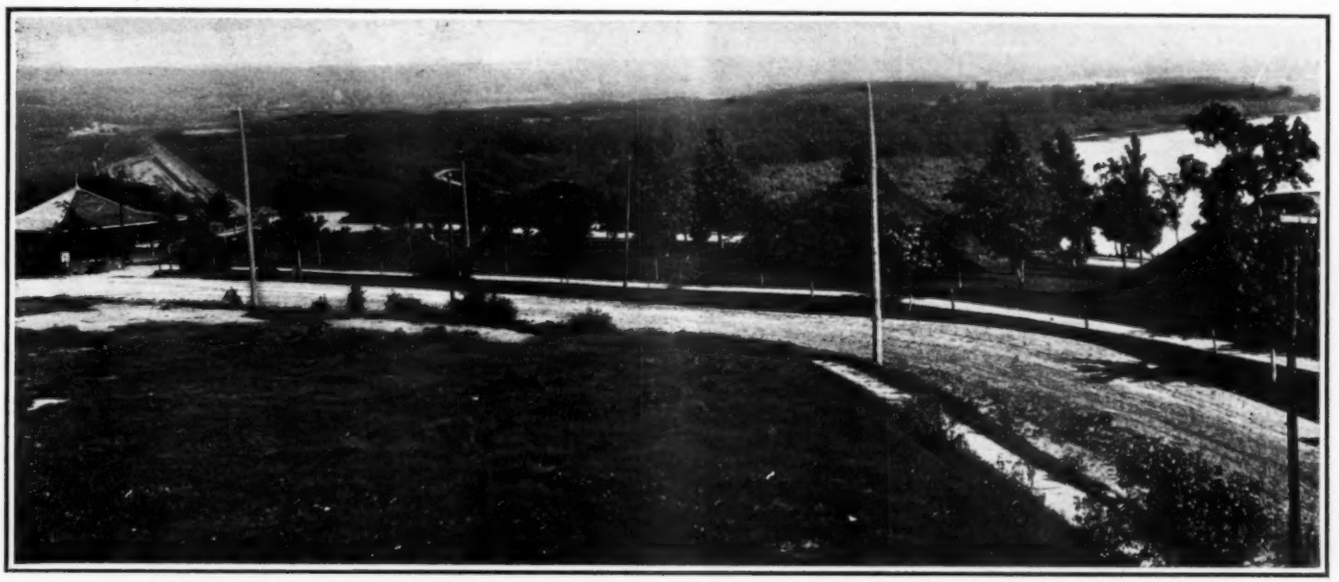
A magnificent panorama of the great gorge of the Father of Waters spreads out before the eyes of the motorist as he rolls slowly across the long bridge over the Mississippi from the fort, the better to drink in the beauties of the scene. Below the bridge the government is constructing a great lock dam, and three miles above is building another near the Lake street bridge. Nearly $800,000 has been expended already on this work to make the great river navigable to Minneapolis. Driveways skirt both sides of the river along here.

Aside from her river drive, St. Paul has two places of particular interest to visitors. One is Lake Como, a very attractive natural body of water surrounded by the finest park in the Northwest, and the Indian mounds, prehistoric artificial embankments skirting the top of the river bluff and from which a panoramic view can be obtained of the rolling country for miles around.

Minneapolis has a wealth of natural lakes, three of them embraced in the park system and encircled by excellent boulevards. Lake of the Isles is nearest the center of the city. By the boulevard it is reached by climbing Kenwood Hill, the steepest grade within the city limits, then through a delightful residence district. The circuit of the lake is a little over two miles by auto. Only a quarter of a mile beyond Lake of the Isles is Lake Calhoun. The boulevard along the south shore is a mile and a half long. Residences border this side of the lake, while the imposing Minikahda clubhouse looms up on the opposite shore.

Lake Harriet is but half a mile beyond Calhoun, and is the real city resort. Here is a large pavilion, where the visitors are to be entertained after their return from Lake Minnetonka on Monday, Minneapolis day.

The tourists will not feel that their visit is complete until they spend a day at that famous Middle West summer resort, Lake Minnetonka, a beautifully irregular body of breeze-rippled water dotted with islets around and among which flash the gleaming sails of yachts and smaller craft. A fifteen-mile drive out from the city over a good road brings one to the handsome clubhouse of the Minnetonka Yacht Club.



CHARACTERISTIC VIEW IN THE TWIN CITIES—DRIVEWAY LEADING PAST THE INDIAN MOUNDS IN ST. PAUL.

Two-Day Race Meet.

Special Correspondence.

ST. PAUL, July 8.—Earl Kiser, in his Winton *Bullet,* carried off the honors in the automobile races to-day, finishing first in every event in which he entered. He defeated Barney Oldfield and his *Green Dragon* in the five-mile open for a prize of $2,500, finishing in 5:51. He also won the five-mile open race for $1,000 in gold, finishing in 5:35. The Fiat, driven by Charles Meyers, came in second, and a Rambler, entered by the Fawkes Auto Company, of St. Paul, third.

Representing the St. Paul Automobile

Club, Kiser won the five-mile Twin-City Championship race, defeating Charles Meyers, who drove the Fiat. He also won for St. Paul the ten-mile tri-city race, defeating Webb Jay in the White steamer and Chevrolet in his Fiat.

Barney Oldfield failed to lower the one-mile track record. He was the only entrant in this special event, and covered the distance in 56 4-5 seconds.

It rained Friday night, and the Hamline track was not in the best of condition. The races were witnessed by about 10,000 persons, and were run off with but one accident. Le Roy Leavitt, twenty-three years old, was run down by Vic Stromquist, one of the amateur entrants. Leavitt was crossing the track into the center of the field and did not see Stromquist approach. The young man was struck by the front wheel and hurled ten feet into the air, and is probably fatally injured.

Vanderbilt Cup Course and Dates.

PERMISSION to use a course on Long Island for the Vanderbilt race and trials in the fall was granted by the Board of Supervisors of Nassau county on Monday of this week. The elimination trials for the selection of the American team will be held Saturday, September 23, and the race itself on Saturday, October 14. The grandstand will be located at a point near Mineola.

The applications which were filed last week ask for the use of the roads on two separate dates—September 23, for tests to select the American team, and on October 14, for the race itself. For the elimination trials, the use of the roads is wanted from 5 A.M. to noon, but on October 14 they are to be closed from 5 o'clock in the morning to 3 o'clock in the afternoon.

The course for this year's race, although held in the same general section of Long Island, differs greatly from that of last year's race. The change of roads was made with the object of avoiding villages, so that controls would not have to be established, and this has been accomplished, as the new course does not pass through any incorporated village having regularly laid out streets. The largest village on the course is that of New Hyde Park, of which the road to be used forms the northern boundary.

The new course is just to the north of the old one, the Jericho road, from New Hyde Park to Jericho, which formed part of the north leg of the course last year, forming the south side of the course for 1905. The roads to be used next September and October are given as follows in the applications:

"The Jericho turnpike, beginning at New Hyde Park, where the Lakeville road enters the same on the west; thence easterly to Jericho; thence from Jericho over the Jericho-East Norwich road to East Norwich at McQueen's corner; thence along the North Hempstead turnpike from East Norwich to Bulls Head corner at Greenvale; thence southerly over the back road so-called from Bulls Head corner to the Isaac U. Willet's road leading from Searington; thence along said Isaac U. Willet's road westerly to Willis avenue; thence north along Willis avenue to Isaac U. Willet's road continued, leading through Searington to Poole's corner north of Lake Success; thence by the Lake Success and New Hyde Park road to the point or place of beginning."

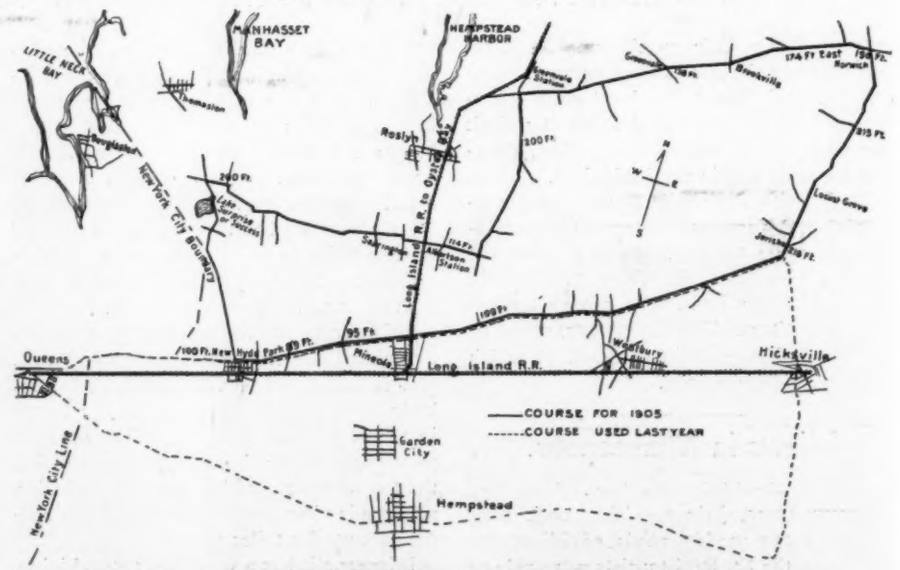
This circuit comprises approximately twenty-nine miles, so that eleven laps or rounds will have to be made to bring the total distance of the race to more than 300 miles, as required by the deed of gift of the Vanderbilt cup.

As will be seen by reference to the map herewith, the new course lies close to the north of Long Island, which abounds in hills. The roads there are more hilly and more sinuous than those in the middle of the island that were used last fall, but in the main they are very good macadamized highways, and are favorably known to Eastern automobilists through the 100-mile endurance run, conducted by the Long Island Automobile Club in 1902. The only railroad crossed in the entire circuit is the Oyster Bay branch of the Long Island road, which is crossed at Mineola and at Albertson Station, north of Mineola.

Sentiment among Long Island residents regarding the Vanderbilt Cup race is reported to have changed considerably since before last year's race, and such opposition as remains is not so much on account of the race itself as because of the fear that for a month or two preceding the contest many thoughtless automobilists will drive over the course daily at break-neck speed.

American policemen who are "sore" on automobilists have their own ways of making things uncomfortable for their unfortunate victims, but they can hardly come up to the ability of the English "bobby" to burrow into the laws and excavate therefrom new excuses for making arrests. The English Motor Car Act provides that manufacturers may arrange to have a general identification mark to be used "for any car on trial after completion or on trial by an intending purchaser." Now the "bobby's" abnormally sharpened wits have seized upon the expression "after completion" and twisted it into a pretext for arresting drivers who are testing cars with rough bodies, such as are commonly used for this purpose, claiming that the cars are in an unfinished condition, and, therefore, running illegally. Verily, for "ways that are dark and tricks that are vain," the British "bobby" is peculiar.

Automobilists who are not thoroughly familiar with the good roads in and about New York City will appreciate a map recently brought out by Rand, McNally & Co., of 142 Fifth avenue, New York, and 166 Adams street, Chicago. The special feature of this map is that the best roads are specially marked to distinguish them from ordinary country roads. Thus, as the tourist plans his route, he can tell as he traces his way what kind of roads he will have to cover, and can guide himself accordingly. The map includes all of Greater New York and the country six or eight miles north; also parts of Northern and Central New Jersey, Staten Island, Long Island and so on. While sufficiently large to be clear and readily understood, the map folds into a size very convenient for pocket use.



SKETCH MAP OF OLD AND NEW VANDERBILT CUP COURSES ON LONG ISLAND.
(Elevations are given in feet along Course.)

Misses Andrews and Conley After Their Arrival from Chicago.

Making Tire Repairs on the Journey to St. Paul.

C. P. Joy, in Pierce Great Arrow, First Arrival in Non-stop Division.

Walter C. White in White Steamer, First to Complete Tour.

SNAPSHOTS OF THE CHICAGO-ST. PAUL TOURISTS ON THE WAY TO ST. PAUL AND AFTER ARRIVAL AT THE TWIN CITY.

What to Do When the Motor Balks.

Practical Suggestions for Tracing Up Troubles on the Road and Directions for Applying the Proper Remedies.

By A. D. RIVER.

WHEN an internal combustion motor has its normal compression and is supplied with the right mixture and a good spark at the right time, it must run. If it fails to run, it is because one of these three things is wrong. The compression is easily tested by turning the shaft by means of the starting crank. If the compression is weak, or if it escapes rapidly, the cause may be investigated. This is not one of the frequent troubles, however, and consequently the other two items will be taken up first.

Motor Refuses to Start.

First of all, if your motor refuses to start, look around and see what you have forgotten to do before you pull anything to pieces. It may be that you have forgotten to turn on the gasoline, or to close the switch, or there may be no gasoline in the tank. If these points have been attended to, and you have correctly followed the instructions for starting the motor, it is in order to investigate the ignition, and after that the mixture.

Failure to ignite may be due to the following causes: (a) defective spark plug; (b) weak battery; (c) vibrator or coil not working; (d) make and break device or timer not working; (e) faulty insulation or broken wire; (f) insulation of secondary winding of spark coil broken down, probably by using too strong a battery, or by running the coil with an excessive spark gap. Not that all of these are likely to happen, but it will be well to cover all of them at this time. The order in which to look for them will be indicated subsequently.

Defective Spark Plug.

(a) The plug may have a deposit of hard carbon on the inner end of the porcelain, or the porcelain may be coated with tarry soot. The former is due to too rich a mixture, and the latter to too much lubricating oil. In either case the deposit should be cleaned off carefully, using gasoline and a toothbrush, sandpaper, or, as a last resort, fine emery cloth. A mica plug may be cleaned with emery cloth, which puts a new surface on the mica. A plug apparently in good condition may still be short-circuited from the porcelain being cracked inside the plug. Such a plug will give a good spark in the open air, but when put in place in the motor the spark will follow the break in the porcelain, owing to the high compression. In the absence of a spark plug tester a conclusion can be arrived at by testing two or three new plugs until satisfied whether or not the old one is at fault. If the porcelain is broken is can usually be replaced by taking the plug to pieces. When this is done care should be taken in putting it together again to put the packing in place as evenly as possible, and to avoid screwing down in it excessively hard.

Battery May Be Weak.

(b) The strength of the battery should be tested with an ammeter, if a dry battery is used, or by a voltmeter if a storage battery, and the maker's directions carefully followed. The storage battery should never fall below 1.8 volts per cell, at which point it is practically exhausted. If both the regular and the spare batteries are nearly exhausted they may be coupled together to carry the car a short distance further. A trial will tell whether coupling in series or in multiple will give the best results; usually it is best to couple in series. If the battery is not too weak to work the vibrator on the coil, a spark may be obtained at the plug by pinching the sparking points a little closer together, or by turning the central stem around to shorten the gap.

Coil Not Working.

(c) The vibrator on the coil should be kept clean and the platinum or iridium contact points dressed occasionally with fine sandpaper or a very fine file. Frequently the best adjustment for a fresh battery will not suit the same battery when nearly spent, but it is better to find one adjustment for all cases, if possible, because then one can switch from one battery to the other, allowing the cells to recuperate. This applies only to dry batteries. A storage battery should be used continuously until spent before changing to another. A partially discharged storage battery will gradually discharge itself entirely, even if not used. The adjustment of the vibrators should be as nearly as possible uniform for all the coils, and the vibrators should have an even, rather high but not "tinny" sound when working. Most vibrators have two adjusting screws. One is the contact screw, and by the other the tension of the spring may be varied. Sometimes one of these will need to be altered and sometimes the other. The locking nuts or screws should be carefully tightened after the adjustment is made, as the contact screw in particular has a strong tendency to work loose.

Timer Not Working.

(d) The timer, unless of the enclosed and grease-packed type, should be kept clean and dry, both as regards water and oil. The rubbing surfaces may be lubricated very slightly with a drop of oil on the finger. If, however, the insulating disc is of vulcanized fiber, it should not be oiled at all, as the oil will soften it and will cause metal and fiber dust to stick to it. If the device comprises a cam and contact springs instead of a commutator and brushes, the screws with which the springs make contact should be kept clean and their points occasionally cleaned with fine sandpaper. It will be necessary now and then to test the adjustment of these screws by turning the crank slowly with the gasoline shut off and the switch on, and noting whether contact is made at the same position of the cranks for every cylinder. In doing this be sure that the contact screws and springs are clean, so that they will make good contact without pressure; also make sure that the spark is retarded.

Possibly Faulty Insulation.

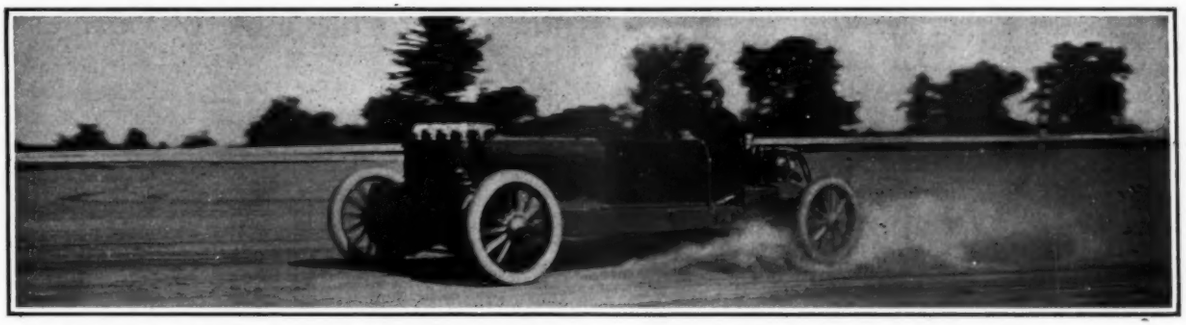
(e) The wiring circuit should be thoroughly inspected. Oil rots rubber and vibration breaks wires. The latter may sometimes be broken close to switches, plugs or terminals, where the break might remain long unsuspected; or the wire may break inside the insulation where vibration occurs. Sometimes the secondary current will divide, part going to the plug and part jumping from some weak place in the insulation to the metal of the engine or frame. This exhausts the battery very rapidly, and one may find himself unexpectedly stalled on this account with a battery supposed to be fresh.

Other Ignition Troubles.

(f) This is not a common trouble. Sometimes it may be corrected by warming the whole coil until the wax insulation inside melts and runs into the break; but as a rule it is better to return such a coil to the makers.

A faulty mixture may be traced to bad gasoline, to water in the gasoline, to dirt in the carbureter, to a stoppage in the gasoline pipe leading to the carbureter, to a leaky float, to a float too high or too heavy to give the proper gasoline level, or to incorrect adjustment of the carbureter inlets or of the spray nozzle opening. The remedy in any case is obvious.

Although for the sake of convenience the possible causes of trouble have been classified as above, it should not be inferred that they should be investigated in that order, as some of them are much less likely to occur than others and needless time and trouble may be spent. The best order of procedure for the average case of a balky motor may be stated as follows, it being understood for the time being that a single cylinder motor is being considered: If the motor, which we will assume is fitted with high tension coil and battery ignition, refuses to start, first make sure that the switch is on and that the trembler or vibrator on the coil buzzes at the proper time. Next see that the gasoline drips from the mixing chamber when the carbureter is primed. The high tension or plug wire should now be disconnected and placed so that the end which has



WALTER CHRISTIE IN HIS NEW FOUR-WHEEL DRIVE CAR IN THE MORRIS PARK RACES.

just been removed from the plug will be at a distance of quarter of an inch from some part of the cylinder casting. Turn the shaft over until the vibrator buzzes and note whether a spark passes from the end of the plug wire to the cylinder casting.

IF THE SPARK IS WEAK.

If the spark is weak, it is probably because the battery is weak. If a test shows the battery to be strong, either there is a weak place in the secondary insulation, through which another spark is passed to the frame, or the spark coil itself is partly short-circuited inside.

A weak spark might also be caused by a defective trembler or by a loose or dirty connection in the primary circuit. If the vibrator is found to be in good order, the next thing is to disconnect the secondary or plug wire and test the spark between the high tension binding post on the coil and the frame of the car. In testing for a fault in the secondary wiring, never cut the insulation near any metal part of the car, or you may produce the ground you are so anxious to avoid. High tension currents leak on the slightest provocation.

(To be continued.)

July 4 Events at Morris Park Track.

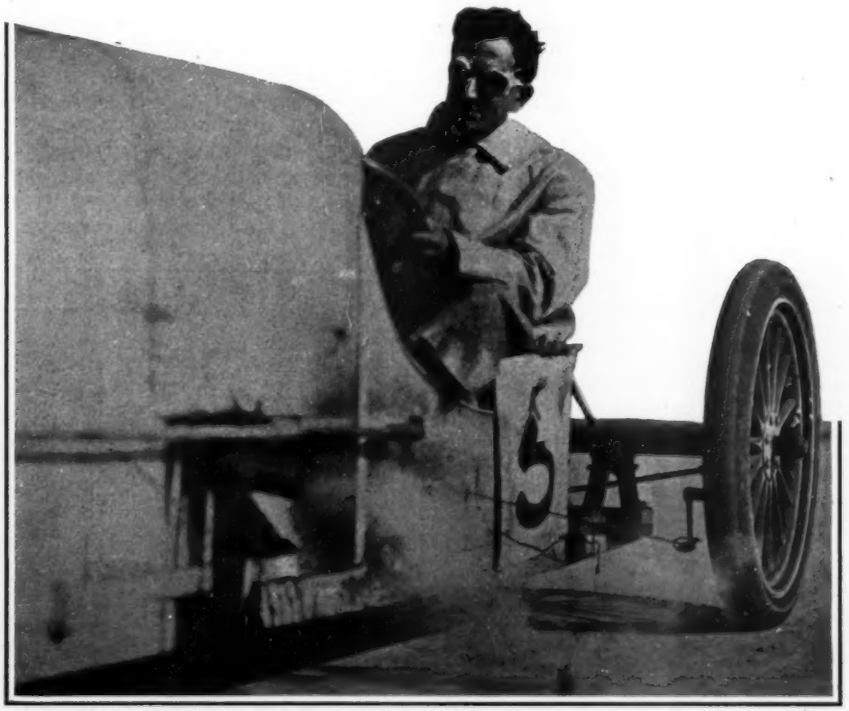
COMPETITION on the second day of the American Automobile Association race meet at Morris Park track, New York, on July 4, was confined almost entirely to Webb Jay, in the White, and Walter Christie, in the Christie, racers, in the fastest class, and to E. Parker in the 24-h.p. Fiat *Junior,* Guy Vaughan in the 40-h.p. Decauville, and Harry Gill in the 30-h.p. S. & M. Simplex, in the middle-weight cars. Damages to the Reo *Bird* light racer and Alfred Vanderbilt's 90-h.p. Fiat in the preceding day's racing had been too extensive to be repaired, and while Chevrolet was warming up Major Miller's 90-h.p. Fiat one of the cylinders cracked, so that it had to be withdrawn before the racing began.

The withdrawal of Chevrolet gave the race for the National Circuit Championship, that was to be run by Chevrolet and Jay, to Jay in a walkover, a circuit of the track being run in 1:43 3-5, to qualify.

Webb Jay was the particular star of the day. winning the plaudits of the 6,000 spectators as much by his magnanimity in consenting to the request of the A. C. of America for a runover of the previous day's heat with Christie for the Thomas interclub trophy, which Jay had won through the breaking down of the Christie car, as by his victory over Christie in the final heat for the Thomas cup and in the mile trials, in which he set a new mark of 48 4-5 seconds. This reduced the track record, made several weeks ago by Chevrolet in the 90-h.p. Fiat, by 3 3-5 seconds—a cut not likely to be equaled soon by any other car or driver.

There was a complete reversal of positions in the interclub race between Christie, representing the A. C. of America, and Jay, representing the Chicago A. C. In the runover heat, Christie took the lead at the start and steadily increased it about 1,000 feet at the end of the third lap. Then in the last lap he was slowed down in the last turn by a flat tire, and Jay began picking up until at the end of the race he had reduced the lead to about 700 feet. Christie's time was 5:14 4-5 for the five and a half miles, and Jay's 5:23 4-5. The fastest mile was 50 1-5 seconds, made by Christie in the second lap.

The final heat, which was the last event of the day, was to have been run over a distance of ten miles, but owing to the bad condition of the tires on the Christie car, the distance was reduced to four laps (5.56 miles). Jay gained the lead in the first turn, but was passed by Christie in the backstretch, opposite the grandstand, and at the end of the first lap Christie was leading by 300 feet. Jay held his own through the second lap, and in the third began closing up rapidly on his opponent, keeping close to the pole on the big turn to avoid the dense clouds of yellow dust torn up by the heavy, low-hung Christie racer. On the fourth and last lap, the steamer overhauled and passed the gasoline machine, and won by 500 feet in 5:28 4-5. Christie coasted down the sloping homestretch, and finished in 5:41 4-5.



WEBB JAY AT THE WHEEL OF THE WHITE SPECIAL STEAMER.

The Middleweight Championship, at three laps (4.17 miles), was contested by only Guy Vaughan in the 40-h.p. Decauville, and E. Parker in the 24-h.p. Fiat *Junior*. They got away well together, but the Fiat almost immediately went to the front, and was about 400 feet in the lead when the race ended. Parker's time was 4:10 2-5, and Vaughan's 4:16 1-5.

The Cracker Handicap went to Harry Gill, driving the 30-h.p. Simplex, with a handicap of 30 seconds, in 7:22, Vaughan in the Decauville running second from scratch in 7:25. There were half a dozen starters.

In the one-mile time trials two new records for Morris Park track were made, Jay's performance of 48 4-5 seconds breaking the record for all classes (incidentally the fastest mile ever made by any type of car on any sort of track), and Parker's time of 55 4-5 seconds, breaking the record for middleweight cars. Vaughan also got under the previous American track record time made by Bernin at Empire City track, by going a mile in the Decauville in 58 3-5. All these times were announced as "world's track records," notwithstanding complete circuits of the track were not made.

The weather was all that could be desired, and the track was in good condition. All that marred the sport was the absence of the many cars that were undergoing repairs and alterations in the shops, and the long delays occasioned by trouble with the Christie car and the cracking of a cylinder on Chevrolet's machine. The crowd displayed admirable patience, notwithstanding the tameness of the racing and the fact that for the thirty minutes of actual racing, it spent two hours and a half waiting for something to happen, and in complete ignorance of the causes of delay.

Following are the summaries:

National Circuit Championship, free-for-all, four laps (5.56 miles)—Webb Jay, White, won in a walkover of one lap in 1:43 3-5, owing to breaking of engine of Fiat, driven by Chevrolet.

Cracker Handicap, three laps (4.17 miles) Harry Gill, 30-h.p. Simplex (30 seconds), 1st, time 7:22; Guy Vaughan, 40-h.p. Decauville (scratch), time 7:25; Frank Leland, 7-h.p. Stevens-Duryea (3:30), third, time 8:06.

Middleweight Championship, for cars weighing 851 to 1,432 pounds, three laps (4.17 miles)—E. Parker, 24-h.p. Fiat *Junior*, 1st, time 4:10 2-5; Guy Vaughan, 40-h.p. Decauville, 2nd, time 4:16 1-5.

C. A. C.-A. C. A. Interclub Race for H. E. Thomas Cup, runover heat from Monday, four laps (5.56 miles)—Walter Christie (A. C. A.), 120-h.p. Christie, 1st, time 5.14 4-5; Webb Jay (C. A. C.) 15-20-h.p. White, 2nd, time 5.23 4-5.

Final heat, four laps (5.56 miles)—Webb Jay, White, 1st, time 5.28 1-5; Walter Christie, Christie, 2nd, time 5:41 4-5.

One-mile Time Trials—Webb Jay, 15-20-h.p. White, time 48 4-5 seconds, announced as world's record; Guy Vaughan, 40-h.p. Decauville, 58 3-5 seconds, announced as record for middleweight cars; E. Parker, 24-h.p. Fiat *Junior*, time 55 4-5 seconds, announced as world's record (for middleweight cars).

How Autos Help One Line of Business.

Special Correspondence.

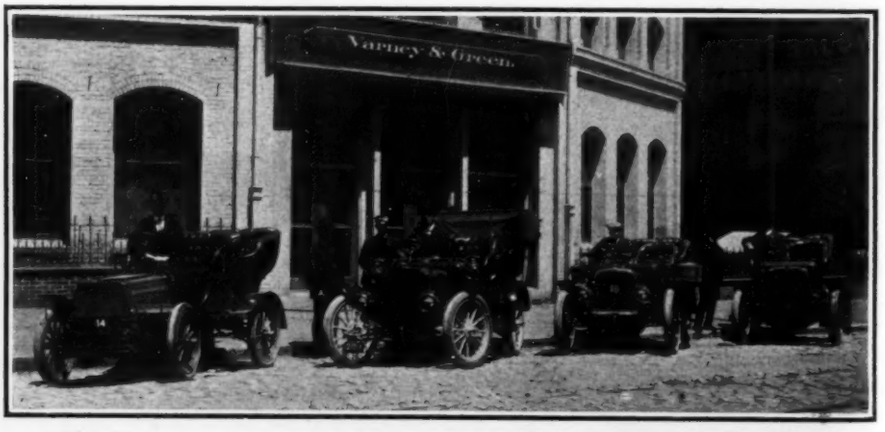
SAN FRANCISCO, July 5.—A practical and instructive test of the value of automobiles as a business adjunct has been made by Varney & Green, a prominent advertising and bill posting firm doing business on this coast with headquarters in this city. This firm has for the past year and a half been replacing buggies and teams with automobiles and has met with such success that the matter has gone beyond an experimental stage, and it is only a question of a short time when, in certain lines of its work, the firm will use automobiles exclusively. As the firm has between thirty and forty teams, this means a big innovation.

The firm now makes it a rule that every solicitor in its employ shall be provided with an automobile and a chauffeur and its experience in this particular has been such that the increased cost of the cars and their maintenance over horses and buggies is not regarded as worthy of consideration, while, in addition, the efficiency of the solicitors has been increased to such a degree as to call for large increases in the salaries paid to them. There is no pretense that the cars can be maintained for near the amount which was formerly charged off to the account of the horses and buggies, but the field that can be covered by the use of the automobiles is so much larger and the consequent increase of business so great, that the members of the firm state that the item of increased cost is not to be considered for a moment. The firm is now using six Pope-Toledo cars, three being of the two-cylinder model and three of the four-cylinder type, and is now arranging for the purchase of others. As Mr. Varney says: "We can use five more cars to advantage at once, and when we get them we will probably find we can use ten more."

In telling of their experience, Thomas H. B. Varney, the senior member of the firm, says:

"I got my first car two years ago, and for some time used it for myself, both as a pleasure car and in connection with my own business duties with the firm. For about a year and a half this and the additional cars have belonged to the firm, and in practically that time the business has increased 50 per cent., a fair portion of which increase is due to the use of automobiles. My first car was a two-cylinder Pope-Toledo and I soon found it so valuable in my business that I proposed to Mr. Green that the firm buy it. I was using it in the firm's business to so great an extent that I felt the firm should stand the maintenance, expense, which at that stage of my experience with cars was a very considerable amount. Mr. Green at first objected strongly, and I continued to use the car as my own property. After a time Mr. Green began to use it, and when I next suggested the matter of turning it over to the firm, he agreed that we could not do without it. We then got more cars and began to observe the improvement at once.

"In our business we have a considerable plant of fences, etc., bearing the advertisements of our customers, which have to be shown in the work of soliciting new business, and which have to be checked off in the course of 'proving up' our work with the firms with which we hold contracts. Take a single firm which I now have in mind, with which we do a large business. The men who look after checking up our stands are very busy throughout the day, and when we were using horses and buggies it would take about three trips to complete the checking up process. We would get them out for one trip and cover about a third of the plant. It would then be a week or two, after considerable urging, before we could get them out on the second trip. The final checking up was a very hard matter to secure, and in some instances it would not be possible to get at it until the contract time had expired, and some of the boards had been stripped. Now we cover the whole ground in a single trip of two or three hours, and we never have the least trouble in getting the



HEADQUARTERS OF MESSRS. VARNEY AND GREEN IN SAN FRANCISCO, CALIFORNIA.

checkers to take the trip. After going over the plant with a couple of our customers the other day, covering a vast deal of ground and using up three hours and a half, with lunch in between, I remarked to them that they had put in a pretty good day's work. "Why," they replied, "this is a picnic!' That, we find, is the way to sell goods. You get your man back in good condition and pleased with his trip, and you can talk business to him.

"We are now using the four-cylinder cars in place of the smaller machines we had at first. It takes a strong and fast car for the work we require. With our six machines we are using four chauffeurs, two of whom are repair men. Our automobiles are each now costing us about $100 a month to run, including the chauffeurs' wages, all supplies and repairs. We are now preparing to put in a repair plant which will materially reduce the expense. We will make an initial outlay of $2,000 on the repair plant, and do not expect to stop at that. One of our two-cylinder machines has been turned over to the foreman of our bill-posting gang, and he is now having it fitted up with a paste tank. We will soon have a car for the foreman of our gang of carpenters, fitted with ladders, a set of falls, etc.

"Where we find the automobile is practically indispensable in our business is in the fact that it enlarges our field and results in doing things that were left undone before. Many a contract has been signed because we were able, by the use of our cars, to get the prospective customer out to look over the plant. The other day one of the big firms in San Francisco wanted to cover a field in San Jose, about fifty miles away. Where before we would have been obliged to take him down on a train and then get a team to go over the plant, we took him on 'a picnic' trip in an automobile, got him back in San Francisco the same afternoon and signed him up for a big contract."

J. Charles Green, the junior member of the firm, speaking of his own experience in particular, and that of the firm in general, said:

"While I was at first entirely opposed to the purchase of automobiles for our business, I now believe they are of more value to me than to anyone in the country. Before we got our first car I would have, we will say, an appointment with Mr. Blank out on Bay street. It is a long and windy drive over several hills and would take at least three-quarters of an hour with a horse and buggy. By the time I got there I would be tired and exhausted with the drive against the wind, dirty and uncomfortable. In all probability I would find Blank out and not due to return for a quarter of an hour. That meant an hour of my time before I got my man. By the time he arrived I was depressed and disgusted and in no condition to talk business. It consequently took me longer than it should to tell my story, and with my fire and enthusiasm gone I had hard work to land my man at all. If I did not lose him altogether I would get him for less business than I should. Probably I had another appointment with Mr. Smith and would arrive there a half-hour late. If I did not find Smith out I would have to be in the position of having first to overcome his disgust at my failure to keep my engagement.

"Look at the difference now. I have an appointment with Blank for 2 o'clock. I jump into my car, am at his place in a few minutes and find he will not return for fifteen minutes. Very well, I jump into my car and tell the chauffeur to drive to Smith's. I close up my business with Smith and get back to Blank in time to catch him on his return. I have been invigorated, not exhausted, by the drive, am full of enthusiasm, and can talk business at my best. The result is that where I used to have a list of four people at the most to see in a day, and might not get around to even that number, I now have a sheet full of names of those to see in a single day, and I see them all.

"There is still another and very important point in favor of the automobile in business. When I drive up to a prospective customer's place of business in my car I never have one of them decline to go out with me to look at my stands.

"When we first started to use automobiles one of our solicitors would take my car on days when I might happen to be out of town. He would come back full of life and wishing he had a car of his own. We got him one and now from a $150-a-month man he has already had two generous raises, and is in line for a third. This is all because he is doing enough more businesses for us to warrant the increase.

"A month ago we put a new manager and a Pope-Toledo automobile in our Los Angeles branch and the business has already felt the improvement."

A Motor Cycle Hoax.

Considerable comment among motor cyclists and manufacturers was caused by a report recently made to the U. S. Department of Commerce and Labor, as follows:

"British manufacturers report a great falling off in the demand for motor cycles, and express the belief that this branch of the industry is doomed. A large number of orders have been canceled, and second-hand machines, hardly the worse for wear, are to be had as low as £18 ($87.60). The collapse of the trade is said to be due to the dislike to the machines owing to their vibration and noise, which eventually become intolerable to the rider, and also to the extreme liability of their delicate mechanism to get out of order."

Upon investigation it was found that the report was taken from a paragraph published in a number of English daily papers, and that the English journals interested in motorcycling were very much stirred up about it. Motorcycling in England is exceedingly popular, and a number of periodicals are devoted exclusively to this branch of sport. The position occupied by English motorcyclists will be appreciated when it is stated that the number of motorcycles registered is considerably in excess of the number of automobiles. The matter was vigorously taken up, notably by the *Motor Cycle*, and a number of letters were addressed to leading English motorcycle manufacturers, asking their opinion on the subject. The result was the flat contradiction of almost every statement in the paragraph. Practically all the manufacturers addressed stated that they were turning out and selling more machines than ever before, and a number were unable to fill orders.

As for the matter of "noise and vibration" which, according to the report, "eventually become intolerable to the rider," it may be said that in a good motorcycle the vibration of the engine is so slight as to be almost imperceptible on smooth roads; while on ordinary roads it is entirely lost in the vibration caused by road inequalities. Even the latter is less than with an ordinary pedal-bicycle, because of the larger tires and greater weight of the motorcycle.

The "delicate mechanism" cry is hardly worth serious consideration, in view of the fact that a good motorcycle will run well under the most adverse circumstances, and with ordinary care and attention will start promptly and keep on going as long as there is gasoline and oil in the tanks and electricity in the batteries, provided the rider cares to stay aboard so long.

Doubtless, as *Motor Cycle* suggests, the writer of the paragraph was inspired by some maker whose machines, through poor design and workmanship, were unable to keep pace with those produced by more up-to-date manufacturers, and were therefore a drug on the market, even at the price quoted. Every large industry has its quota of such ne'er-do-wells, and it is not surprising that they find difficulty in disposing of their product, and are ready to throw mud at their more successful rivals.

The oldest residents of Charlotte came here by stage, which was a great advance over the old ox team after which many of us have traveled. But the stage coach is rapidly disappearing, and the Battle Creek *Journal* of last week records the last trip of the last stage out of Battle Creek on the last day of June this year. Some of us older people may not have patience with the tooting, snorting autos, but they are in the list of equipages leading up to the airship, and, as we said last week, the only way to dodge them is to go into solitude or get off the earth. The better way, however, is to smile and thank the inventive genius of your time that has given us the speedy means of travel and communication which puts us in such close touch with our friends everywhere.—Charlotte (Mich.) *Tribune.*

POPE-TOLEDO FINISHES IN GORDON BENNETT.

Lyttle's Car Makes New Record for American Entries and Shows Remarkable Regularity in Running—Was in Eighth Place on Third Round.

By Special Cable from Our Own Correspondents.

RECORD OF PERFORMANCE OF HERBERT H. LYTTLE, IN 50-HORSEPOWER POPE-TOLEDO RACER, WHO STARTED SIXTH IN THE GORDON BENNETT RACE, JULY 5.

Elapsed Time. First Round.	Elapsed Time. Second Round.	Elapsed Time. Third Round.	Elapsed Time. Fourth Round.	Total Net Running Time.
2:21:09.	2:42:51.	2:16:17.	2:10:00.	9:20:31.
Finished 15th.	Finished 14th.	Finished 8th.	Finished 12th.	

PARIS, July 7.—For the first time in the history of the Gordon Bennett race an American car completed the distance. Lyttle, in the Pope-Toledo, made a remarkable run on the Auvergne circuit in the great race on Wednesday, working up to eighth place in the third round, though at the end of the first round he was fifteenth, and he finished twelfth in the net running time of 9:20:31.

In the first round the motor ran badly, and showed that it was overheated. Knipper the mechanician, climbed out on the machine and finally discovered that the main feed pipe of the lubricator had broken, and that the motor had been running dry. He held the pipe together at the break for some time. It was impossible for him to continue in this position, and they decided to feed the oil direct from the cans into the crankcase. On every up stroke of the cranks the oil was splashed out, covering everything, including Knipper's goggles, so that he could not see. The first round was finished slowly in fifteenth place in the time of 2:21:09.

In the second round Lyttle stopped and changed three tires, finishing fourteenth, in the time of 2:42:51.

On the third round Lyttle stopped to change the other tire, and finished eighth, in 2:16:17.

The fourth round was his fastest, being made in 2:10:00. He finished twelfth.

On account of the mishap to his lubricator, he had to use six gallons of oil in the race. He filled twice with gasoline and once with water.

The Diamond tires were never punctured throughout the race.

On winding roads, Lyttle's car was the "quickest" in the race, but he lost time on the straight ascents.

FRANCE WITHDRAWS FROM GORDON BENNETT COMPETITION.

From Our Own Special Correspondent.

PARIS, June 29.—Last night the Automobile Club of France decided that in 1906 it would not compete for the Gordon Bennett cup. This momentous decision does not come as a surprise to those interested in international automobilism. For a long time past France has agitated against the Gordon Bennett regulations, which limit it, the greatest automobile manufacturing country of the world, to the same numerical representation as the latest arrived and least important automobile nation. The presence of six Mercedes cars (three German and three Austrian) in this year's race is pointed out as an injustice and a danger to the French industry.

It was last December, immediately after the closing of the Paris salon, that opposition to the Gordon Bennett contest took concrete form. After selecting a circuit, the French club decided that the Gordon Bennett cup should be run at the same time as an international course to be named the Grand Prix of the Automobile Club of France, in which all builders, to whatever nation they belonged, should have an equal chance. It was also decided that in 1906 and following years the club would not take part in the Gordon Bennett cup under present conditions, but would organize their own Grand Prix race, open to all constructors, irrespective of nationality. This obvious attempt to kill the Gordon Bennett race called forth a loud protest outside France, to which, for a time, no attention was paid.

At the beginning of February entries for the 1905 Gordon Bennett and Grand Prix were closed, twenty-six cars being engaged, and it was thought, despite an ominous growl from abroad, that the affair was settled. Foreign clubs, however, continued to demand the separation of the Gordon Bennett race from the Grand Prix, and French constructors just as resolutely declared for their being run together.

On February 20 the international conference was held, delegates being present from the eight countries concerned, and after a fierce struggle the French club agreed to separate the Gordon Bennett race from the Grand Prix and obtained a promise that each competing club should bear a share in the supplementary expenses of the previous event, and that in 1906 a modification of the Gordon Bennett race be studied, taking as a basis the productive importance of each country.

Ten days later, in view of the opposition brought to bear by French constructors, who threatened to withdraw from all races if these two events were separated, the club abandoned the Grand Prix race and the Gordon Bennett event remained in its ancient supremacy. With the exception of Mors, all the builders rallied to the club's decision, with a result that is known to all the world.

Yesterday's meeting, which was attended by forty-four members of the club's committee, among them being Brasier, the present holder of the cup, and several prominent constructors, was marked by a keen discussion. A vote was proposed for "yes" or "no," and changed to "suppression" or "maintenance," with the result that twenty-three voted for abstaining from the 1906 Gordon Bennett race, fourteen for competing, and six voting papers were blank, and the Marquis de Dion, vice-president of the club, abstained from voting on the ground that he had no racing interests.

As a consequence of this vote, the following resolution was formulated: "In conformity with a wish expressed by the constructors having taken part in the eliminating race, the committee decide not to compete in the Gordon Bennett race of 1906." Several members, anxious to know what would be done in the future, proposed that they should examine the steps to be taken in France in 1907, but this proposition was rejected by the committee.

In some quarters there is a feeling that the club ought to have waited until July 5 had decided the fate of the Gordon Bennett cup for another year before taking its decision; but it is undoubtedly more satisfactory to all foreign nations concerned that they should have acted in this more generous fashion and declared to the world their decision whether victory or defeat should be theirs next week.

As to a substitute for the Gordon Bennett race in France, nothing is known. The probability is that the Grand Prix scheme, proposed last December, will be again revived and become France's annual event.

From Germany, where these struggles have been watched with keener interest than in any other country of the world, comes an announcement of the greatest importance. Calculating on the withdrawal of France from the Bennett cup, it was decided at the very moment that France was considering what steps to take, that "The Automobile Club of Germany shall organize, in 1906, a Grand Prix to be run on German roads."

It requires no gift of prophecy to predict, during the next twelve months a fight for national supremacy unequaled in the automobile world.

Amongst French constructors the feeling is, on the whole, one of satisfaction at the action of the club, the opinion being generally expressed that it was time to put an end to the inequalities of the Gordon Bennett regulations. Mr. Michelin, the tire manufacturer, declares that the Gordon Bennett cup has done too much harm to the French industry to allow of any hesitation at the present moment. The regulations of the cup have made them the dupes of the world by obliging other nations to manufacture all the accessories which, formerly, France alone produced, with the result that to-day France has competition which might otherwise never have existed.

Construction of Fiat Winners.

From Our Own Correspondent.

Italy was represented in the Gordon Bennett race this year, as last, by three Fiats entered by the Italian Automobile Club. Of the drivers, Lancia and Cagno drove in last year's race, while Nazarri, who has the distinction of being the private chauffeur of the Queen of Italy, took the place of Storero, the driver of the third Fiat last year, who was ill and unable to drive this year.

The Fiat racing car has a four-cylinder vertical engine with cylinders cast in pairs, of gray iron; the cylinder bore is 180 millimeters and the stroke of the piston is 150 millimeters—or a little more than seven inches and a little less than six inches, respectively, the diameter of the piston thus being greater than the length of its stroke. The power officially claimed for the engine is 110-horsepower; but in view of the large cylinder dimensions and the rather high normal speed of the engine, undoubtedly the power is underestimated. A Simms-Bosch low-tension magneto furnishes current for the make-and-break ignition apparatus, the latter being very similar to the ignition system employed in the Mercedes cars. In order to make possible the starting of such a large engine by the usual cranking method, compression relief cams are brought into play, raising the exhaust valves at the proper time. The carbureter is of the usual Fiat type, with a sliding piston which automatically uncovers auxiliary air ports when the speed of the motor increases. A double accelerator pedal is fitted, one under each foot of the driver, so as to enable him to control his engine by foot throttle when either foot is being used for the brake or the clutch pedal.

The frame is of pressed steel; the front wheels are 34 1-4 inches in diameter with 3 1-2-inch tires, and the rear wheels are 34 3-4 inches in diameter with 4 3-4-inch tires. An interesting fact is that the Michelin tires, with which all the Fiat racers are fitted, were made in a small plant in Italy, specially fitted up for the purpose, it being necessary that every part of the car should be built in the country it represented. The wheelbase of the car is 110 inches and the tread 54 inches. The cars are a little shorter and a little less powerful than the Mercedes; they have, however, the advantage of carrying the centre of gravity somewhat further back than the German cars, resembling in this respect the Richard-Brasier cars. The Fiats are not as low down, however, as the latter.

Chain drive is employed, and the cars were geared lower than they will be for other contests, owing to the difficult nature of the course. The countershaft sprockets have thirty teeth, while the sprockets on the rear hubs have thirty-four teeth, this gearing giving approximately 93.7 miles an hour. It is known that on the Mercedes cars both sprockets have thirty-four teeth, though it was believed by the well-informed, before the race, that the gear would be reduced to the same ratio as used in the Fiat Gordon Bennett racing cars.

NAZZARI, CHAUFFEUR TO THE QUEEN OF ITALY, AT THE WHEEL OF ONE OF THE FIAT GORDON BENNETT RACERS.

The water circulation in the Fiat cars is maintained by a pump; the radiator is of the honeycomb type. There is no fan behind the radiator; instead, the spokes of the flywheel are made in the form of blades, so that air is drawn through the radiator and motor casing when the flywheel revolves. The clutch is of the Hele-Shaw (multiple disc) type. The weight of the car is 2,197 pounds, seven pounds within the maximum weight limit, and the great gasoline tank contains sufficient gasoline to enable the car to cover the entire distance of the race without refilling.

Girardot Feels Loss Keenly.

Special Correspondence.

PARIS, June 30.—There is a most pathetic aspect to the accident that threw M. Girardot and his car, the best work of his brain, out of the elimination trials for the Gordon Bennett race. The designer's thoughts had been on his car and the great race for months; he had put all the best of himself in the machine, and expected everything from it. The sudden and complete sinking of his hopes affected him greatly, and his state of discouragement at his misfortune was of unexpected intensity.

Fortunately the accident was harmless, so far as serious personal injuries were concerned, though several reports to the contrary received a good deal of credence at the time. M. Girardot's only injuries consisted of a few bruises and a sore chest, caused by a large quantity of gasoline from the crushed tank soaking into his heavy woollen clothing and then rapidly evaporating in the hot sun.

The cause of Girardot's accident was the coming off of the front tires and the swerving of the car. Instantly the machine dashed off the road toward the right; one of the wheels struck the small tree which is seen in the engraving lying between the front axle and the tank. This tore away one of the spring seat clamps on the front axle, and the axle was forced diagonally under the engine bed. The car then swung around and faced in the direction from which it came, and in swinging around the left rear hub struck a telegraph pole which was actually torn down by the tremendous impact, and may be seen in the photograph. The car then upset in the position shown. With the exception of the bonnet, all the parts of the car are shown just as they fell when the accident occurred.

Girardot and his mechanic were both thrown out; the seats and the cylindrical gasoline tank fell on the unfortunate driver, pinning him to the ground until he was extricated from his position by rescuers, who found the tank on his chest, the gasoline pouring out onto his clothing, and the seats on his legs. The mechanic, who is known by the pseudonym of Loupi, was thrown out when the car struck the telegraph pole, falling on the grass some distance from the road. He also was practically unhurt; but the unexpected shock stunned him so that for a few minutes he seemed to be out of his mind, exclaiming incoherently: "We must take the turning! We must take the turning!" In a very short time, however, he recovered complete possession of himself, and is now in perfect health. Girardot is still suffering from the shock to his nervous system and from his intense disappointment. Incidentally, the photograph shows that the disaster occurred on a straight stretch of road.

FARMAN'S PANHARD AT BOTTOM OF CLIFF.

Most meritorious, from a technical point of view, was the way in which Girardot's rear axle construction withstood the terrible test of hitting and tearing down a telegraph pole when the car was going probably ninety miles an hour. This means much in favor of the system.

The accident to Farman in a Panhard was less complex, though not less dangerous; again, however, good fortune preserved the driver and his mechanic. Farman admits that the cause of his accident was in the fact that he mistook the dangerous curve he was approaching for one far easier. He took the curve at a speed of 90 miles an hour, when half that speed would have been dangerous. The front axle gave way as a result of the fearful stress, which was hardly to be wondered at. Farman and his mechanic were thrown out and rendered unconscious for a few minutes, but were not seriously injured.

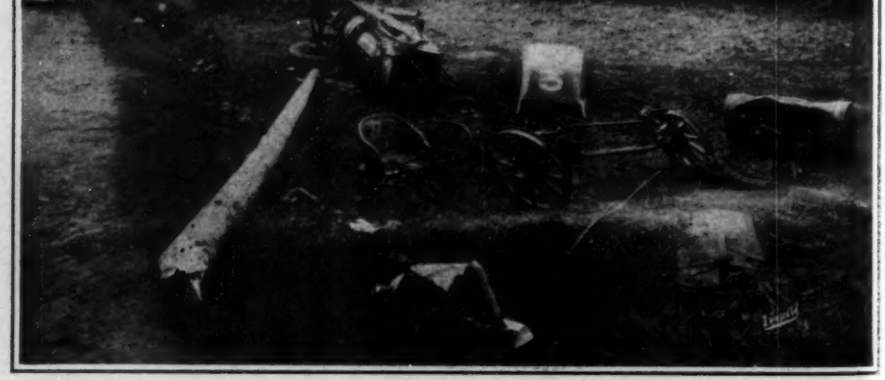
A rumor that was current, and was quite generally credited, was that Teste had upset his Panhard at a curve, and had himself righted it and started off on the course. This was not correct, as M. de Knyff himself advised. Teste simply hit an unnoticed obstruction and broke two spokes in one of his driving wheels. He continued the race, at M. de Knyff's order, and had no further trouble from the damaged wheel.

TRACY RUNNING WHEN RACE ENDED

Special Cable.

PARIS, July 7.—Tracy, in the Thomas Locomobile, broke his intermediate gear before the Gordon Bennett race began. During the race his clutch seized and could not be opened. He was running when the race was officially ended.

Ross Crawford and W. W. Woolley got up at dawn to-day and journeyed in the latter's automobile to the Wilson Crawford farm, three miles south of Nachusa to attend the big barn raising. The frames and timbers had all been prepared by Harvey Herbst and his carpenters and the raising was completed without accident by the fifty or more neighbors who had gathered to assist in the work.—*Dixon (Ill.) Telegraph.*



GIRARDOT'S MAGNIFICENT RACER IMMEDIATELY AFTER THE MISHAP IN THE TRIALS.

Construction and Operation of a Home Made Steam Runabout.

By H. D. PENNEY.

IN the summer of 1901 I contracted a bad case of the automobile fever and, after much cogitation, decided to build myself a steam runabount, choosing steam as the motive power because I had had experience in steam engine work. The car was to have a wheelbase of 62 inches with 54-inch tread, with body of the usual carriage design and engine and boiler under the seat. From a dealer in automobile supplies I purchased the parts for a set of wire-spoked wheels 28 inches in diameter; these I assembled, and fitted on 2 1-2-inch single tube tires. Both wheels and tires gave excellent satisfaction, though the spokes were rather light, and the tires were really too small. A running gear was built up of steel tubing, with the usual trussed front and rear axles, all joints being well brazed. The tubular reach rods had steel stubs brazed into their ends, onto which the nuts were screwed. Instead of using lock nuts of the usual style on the ends of the reaches I used a single cap nut on each end, a pin put through a hole in the nut passing through a slot cut in the end of the rod, which made it impossible for the nut to come loose from the effect of vibration. Three springs were used, two in the rear and one crosswise in front; these were 30 inches long and 1 1-4 inches wide, with four leaves each, but proved too light and were later replaced with six-leaved springs 34 inches long and 1 1-2 inches wide. These have been satisfactory.

A metal body, with detachable rear panels and a metal dash was purchased. This body was lined with asbestos to deaden the metallic sound, which it did to perfection, and was finished in black baked enamel. The panel-back seat, which was obtained from a carriage shop, and the footboards were the only parts of the body made of wood. The body proved to be very durable and satisfactory, and I do not think it can be excelled for a steam runabout. I found that the detachable rear panels, through which access is obtained to the boiler and piping, were a very great convenience. The car was equipped with side lever steering gear, throttle lever at the side of the seat, engine, boiler and air tank under the seat and the fuel tank under the footboards.

The general arrangement of the machinery was very similar to that of the popular steam runabouts, from which I copied all of the bad features and none of the good ones. The boiler shell is of seamless steel with the lower head integral and the upper head riveted in. It is of the upright fire-tube variety, and has 412 half-inch copper tubes 13 inches long, expanded and beaded in both heads. Four brackets riveted to the shell support the boiler and rest on an angle iron false frame, which also supports the engine. The boiler is covered with three layers of 1-4-inch asbestos fire felt, outside of which there is a Russian iron jacket. The holes for the tubes were drilled and then reamed to size; the tubes were expanded with the usual tool, after which the projecting ends were beaded over.

As the beading tool I used was designed for use in a drill press, and I had no drill press suitable for the job, I put the tool in a breast drill, as shown in Fig. 1, and rigged up the apparatus, illustrated in Fig. 2. The boiler was placed on end and the springboard gave the necessary pressure on the beading tool. The operation of this affair was highly favorable to the development of muscle; but by using a liberal amount of vaseline on the tool the work was accomplished in a very satisfactory manner.

The parts for the engine were purchased in the rough and fitted up by myself. It is of the usual double cylinder upright type, with a bore of 2 1-2 inches and a stroke of 3 1-2 inches and has link reversing gear. Ball-bearings are fitted on the crank pins and on the main bearings of the crank-shaft, the eccentrics being plain. Fig. 3 shows a front view of the engine.

About the time the engine and boiler were ready to be placed in position I contracted the kerosene burning fever, and was induced to part with some hard cash in exchange for

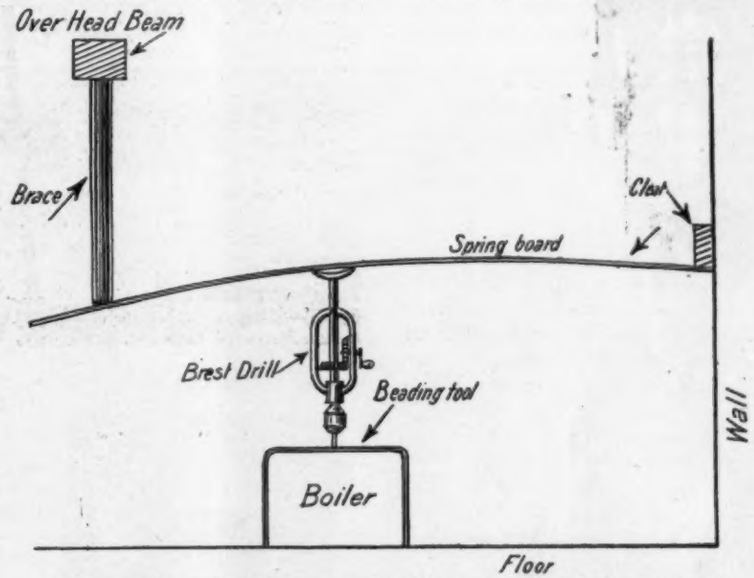


FIG. 2.—IMPROVISED DRILL PRESS FOR BEADING BOILER TUBE ENDS.

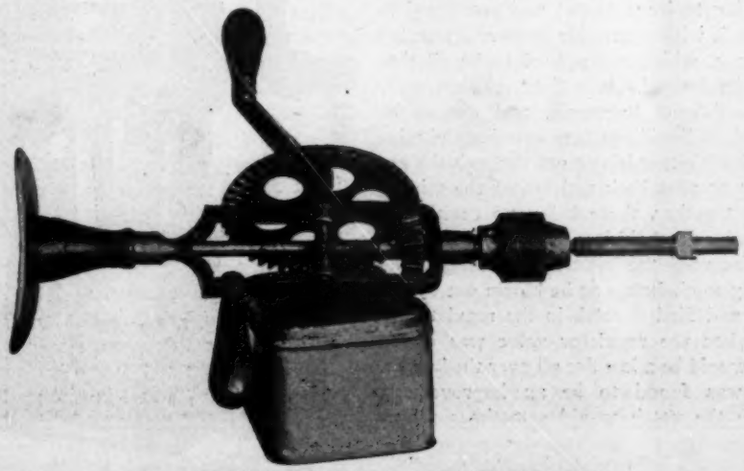


FIG. 1.—BREST DRILL FITTED WITH BEADING TOOL.

FIG. 4.—GASOLINE BURNER THAT CANNOT BE FLOODED.

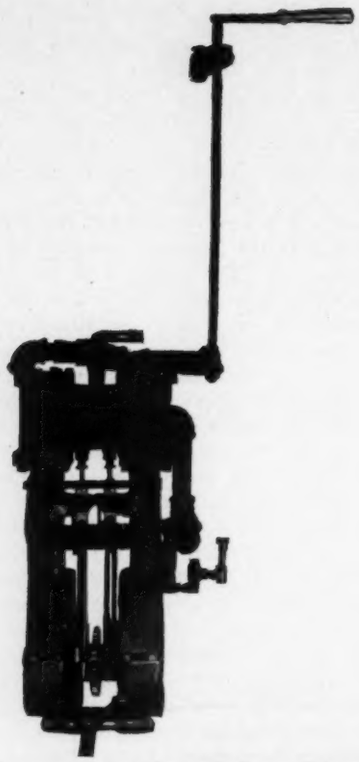


FIG. 6.—ENGINE WITH SPEED REGULATING HANDLE ATTACHED.

a kerosene burner, which was to "revolutionize the steam carriage." In due time the power plant was installed; and I found later on that the new burner was highly efficient as a means for creating excitement among the populace and exercise for the members of the fire department, who on several occasions chased me along the street with fire extinguishers.

For one season I tried to use the car as originally equipped, and I can truthfully maintain that I spent the greater part of the automobiling season lying on my back in the road, standing on my head among the hot machinery under the seat or walking home. I had all the troubles the steam carriage is heir to, besides a few that were invented for my special benefit; but the kerosene burner was the most spectacularly successful trouble-maker of the lot. The vaporizing coil, which very likely vaporized freely in the mind of the designer, but never did anywhere else, was supposed to be heated by pouring gasoline into a cup under it and lighting the gasoline with a match. In practice, however, the only way I could get the thing hot enough to work was to sit by it and squirt more gasoline into the cup with a long-nosed squirt-can when the supply was nearly burned out—a job that I did not altogether relish.

It usually required from 20 to 30 minutes to get the pilot light started, after which, if the pilot light did not go out, which it usually did, I could get the main burner started in another half hour, the whole operation of getting up steam consuming from an hour to an hour and a half, when the pilot light was on its good behavior. It was necessary to keep the vaporizing coils at red heat in order to vaporize the fuel properly; but as this was an impossibility, the imperfectly vaporized fuel caused heavy deposits of soot in the flues, those directly over the pilot light being completely choked after a single ride, rendering the boiler incapable of generating sufficient steam to propel the car.

Another source of trouble was the automatic (?) fire regulator operated in the usual way by steam pressure acting on a diaphragm. When the steam pressure rose to the point where the regulator shut off the fuel supply, the fire would go down and the vaporizing coils cool off until they went out of business and the burner was flooded with liquid oil, which would catch fire and run out

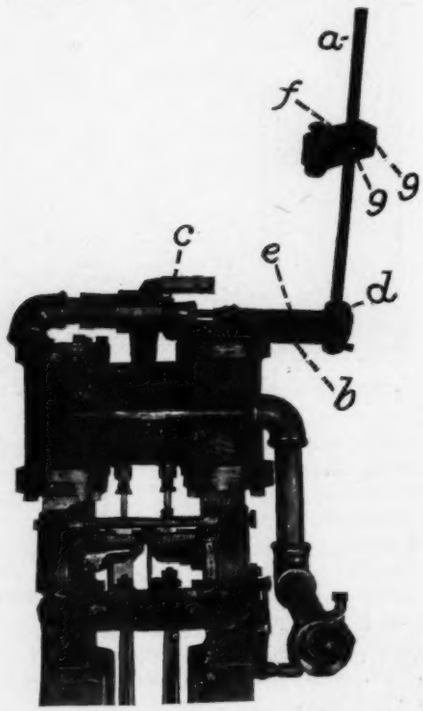


FIG. 5.—ENLARGED VIEW OF THROTTLE VALVE REGULATOR.

on the ground or over the floor boards, making a thrilling spectacle.

After setting several buildings on fire and being chased by the fire department I concluded that the kerosene burner was a splendid thing to leave alone; and proceeded to replace it with a gasoline burner, illustrated in Fig. 4, which has proved to be all that could be desired. It is light, efficient, durable and easy to repair, and cannot be flooded, as liquid gasoline entering the mixing tube is either blown out through the gas outlets or runs back and out of the mixing tube altogether, there being no cavities or depressions to hold it.

I discarded the pilot light, owing to its liability to choke up or be blown out by the wind, and filed a notch in the regulator so that when the regulator valve was closed there would be a low fire all over the burner. This was found to be an improvement, though the notch would sometimes fill up and the fire go out, when the regulator would open and allow the gasoline to be distributed along the street. I had a great deal of trouble with the fire regulator, as it was impossible to keep the spindle steam tight in the stuffing box without tightening it so much that it would stick, the steam pressure often varying a hundred pounds before the regulator started to regulate. This was particularly annoying on hills, where the steam pressure would fall until the car was almost stalled before the regulator moved. I therefore put a three-way cock in the steam pipe leading from the boiler to the regulator, the closing of which relieved the regulator of steam pressure and at once threw the fuel valve wide open—in fact, I usually kept it in this condition when on the road.

Another trouble was the pump, which, though in good order, would not keep the boiler supplied with sufficient water. The pump was a small high-speed affair driven from the engine crosshead; the plunger was 5-8 of an inch in diameter with a 3-4-inch stroke. The diameter of the plunger was increased to 3-4 inch, with no better results; but upon replacing the 1-8-inch suction pipe with a 1-4-inch pipe, and substituting a straightway check for the rise and fall check originally used, the pump was found to furnish as much water as the boiler could use at the maximum speed then attainable by the car, which was about 10 miles an hour.

The first season's use of the car demonstrated to my own satisfaction that side lever steering was unsatisfactory, on account of the unsteadiness resulting from shocks tending to deflect the front wheels; so a wheel steering gear was substituted. The original throttle opened against the steam pressure, and could not be opened gradually, as it would start very hard and then jump open suddenly as the pressure became partially

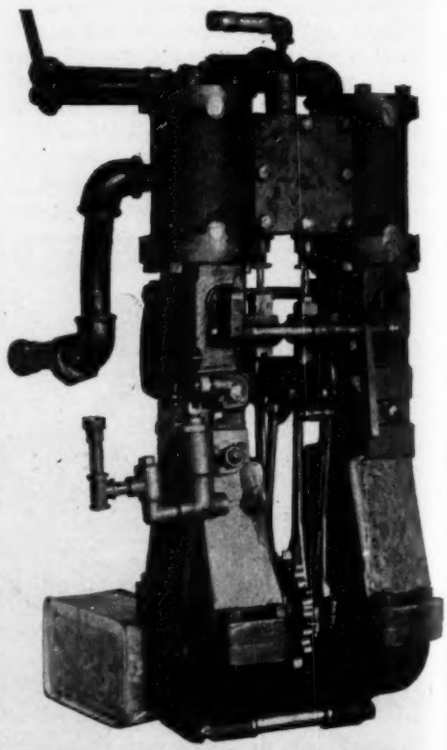


FIG. 3.—FRONT VIEW OF THE ENGINE.

balanced; the spring of the connections would cause it to open too much and the car would start forward with a violent jerk.

It was impossible to regulate the speed of the car properly; it had to be done by a succession of short, practically full throttle openings alternating with shut-offs. So I applied the arrangement shown in Figs. 5 and 6. The lower end of the rod *a* (see Fig. 5) is supported by the bracket *b* attached to the throttle valve by means of the nut or collar *c*. The lower end of rod *a* carries a small eccentric *d*, which operates the valve stem through the link *e*. The upper end of rod *a* carries the operating handle; the rod passes through a bearing *f* made of hard wood, split and tightened on the rod by bolts *g g*. This keeps the rod from moving by itself, as it turns stiffly in the wooden bearing. Quarter of a turn of the handle throws the throttle wide open. This arrangement has proved entirely satisfactory in a season's use.

The necessity for taking out the seat cushions and the bottom of the seat to get at the engine, and other considerations, led me to place the engine under the footboard, as shown in Fig. 7. With the engine in this position the throttle rod was run up the steering column, bringing the handle within very convenient reach. This placing of the engine made the chain rather long; but no trouble was experienced from this source except at comparatively high speeds—the car having been tinkered with until it would run 20 miles an hour.

The machine was practically rebuilt after the first season. The wheelbase was lengthened to 76 inches; an extension built in front, as shown in Fig. 8; a new gasoline tank of 14 gallons capacity was hung from the front of the extension, while the old 6-gallon tank was placed on top of the extension near the dash and used for an air tank, the original air tank being discarded. The extension was covered by a wooden bonnet fitted with a door in the front end.

Steam and air gauges were removed from the dash and placed on the steering column just under the wheel, the piping running down the column. The labor of pumping air led me to put in a White air pump operated from the left hand side of the engine, controlled by a pedal. The steam pipe supplying the engine was led down the side of the boiler, once around inside the fire-box and horizontally to the throttle, its length and position making the use of a swing joint unnecessary.

I discarded the automatic fire regulator owing to the unsatisfactory results obtained with it during the first season, and substituted a hand-operated valve with a by-pass which kept a low fire when the main valve was shut. In connecting up the brass gasoline piping the threads at points where there was not sufficient heat to melt solder were cleaned, tinned with solder and screwed together while hot enough for the solder to flow. Where joints were liable to get too hot for this treatment, they were screwed together dry and brazed with silver. During the past season this method of making joints has proved to be entirely satisfactory, there having been no signs of leakage under any conditions of use or abuse.

I have found that the manipulation of the gasoline and water valves becomes almost second nature, and much prefer the manually-operated valves to the automatic devices. On the road I usually drive with the fire turned full on, and I find the combination of high pressure and strong fire very comforting on hills. The fire requires very little attention except when driving at slow speeds. The products of combustion and exhaust steam are discharged downward together through a flue just above the sill at the rear of the body.

In starting the fire it has been my practice to squirt a small amount of raw gasoline from the jet into the mixing tube; on being lighted the flames rising from the mouth of the mixing tube about the burner jet and gasoline connections furnish sufficient heat to partially vaporize the fuel at the jet, when a slight opening of the fuel valve will blow the flames through the mixing tube and up through the burner, heating the vaporizing coil or loop in the fuel pipe. When the burner is sufficiently hot, I close the fuel valve, allow the flames in the mixing tube and burner to die out, and then relight the burner with a match through the peep-hole.

I did not find it necessary to clean the boiler tubes at all during the summer, and when the car was laid up for the winter they were found to be practically as clean as in the spring.

When the car was put in service after a number of improvements had been made it was found that the abandonment of automatic regulation, the tight joints and the improvements generally had made it possible to maintain any desired steam pressure, 300 pounds being carried, which was absolutely out of the question when the old automatic regulating devices were used. With the increased steam pressure, however, other troubles developed, one of the first being the constant breakages of water glasses, the water gauge being of the ordinary type.

Investigation revealed the fact that the breakages were due to the springing of the side of the metal body to which the connections were attached, the tendency of the pressure in the gauge being to separate the upper and lower fittings, throwing them out of line and straining the glass. It was found that when steam was turned on and then off the upper and lower gauge connections would vary their distance apart an eighth of an inch. A piece of hardwood was screwed to the panel behind the gauge to give additional stiffness; this improved matters, but the trouble was not altogether stopped until a 1-4-inch tie rod was run from the upper to the lower connection, between the glass and the panel. After this was done there was no further difficulty from breaking glasses.

FIG. 7.—MR. PENNY'S COMPLETED CAR, SHOWING EXTENSION FRONT AND ENGINE UNDER THE FOOTBOARD.

The increased demand of the boiler for water, owing to the increased speed of the car, brought on more pump trouble, and after sundry boiler burnings and pump breakages I have adopted an injector of special range furnished by the American Injector Co. The injector has a maximum capacity of 36 gallons an hour, and will work on a 3-foot lift with steam pressure from 45 to 250 pounds. After considerable study of boiler feeding devices I have come to the conclusion that this is likely to give the best results; it has no moving parts except the check valve, and can be very readily handled from the seat; cleaning is easily accomplished if necessary.

The use of the injector makes the feeding of the boiler independent of the motion of the car, and also enables the operator to take

advantage of down grades and levels to fill up his boiler. The injector will also deliver hotter water than can be handled with the pump. I have placed the injector under the seat close to the boiler, making the steam and water pipes very short and direct. At the time the accompanying photographs were taken the work of attaching the injector was not completed, and therefore the operating valves and handles are not seen.

The high steam pressure acting on the unbalanced slide valves was responsible for the sticking of the eccentrics in their straps. Both eccentrics and straps were of steel, lubricated through an oil-hole. The bearings would insist on seizing almost every time the car went out unless they were oiled every two or three miles, and when the eccentric seized the rod would proceed to wind around the crank-shaft until something broke—generally the strap screws. As a rule this disabled the car to the point of getting towed home; but on one occasion I managed to run backward on one cylinder for five miles; but the valve rod broke when I was almost home, and as it was nearly midnight the car was left by the roadside and my friend and I walked the rest of the way. Bronze eccentric straps were finally fitted, with oil pockets packed with felt; this put an end to trouble from this source.

On one occasion a crosshead pin, which was of steel, seized and caused the end of the connecting rod to twist off. The swinging end of the rod caught in the engine frame and twisted the crank-shaft nearly 3-8 of an inch, and affected the action of the valves to an appreciable extent. After this I bushed the crosshead pins with hard bronze and case-hardened the pins. Trouble was also experienced from the crosshead slides, which were of bronze, running dry; but this was soon stopped by attaching pads of felt, which, soaked with oil, wiped the slides at every stroke.

I have had so much trouble with the air pressure system, particularly in keeping sufficient pressure pumped up on the road, that I am fitting the car with a fuel pumping outfit, pumping the gasoline against a water-sealed air-cushion so arranged that the air cannot come in contact with the gasoline and become absorbed by it; this arrangement will render the renewal of the air-cushion unnecessary.

The car as originally constructed was of little use on account of lack of steam. It has been rebuilt, developed, improved and made practical, but only after a large amount of study and experiment, backed by a liberal amount of money; never mind how much. Had I anticipated at the beginning the extent of the labor, trouble and expense involved, the job would never have been undertaken. The design and construction of a successful automobile requires an engineering knowledge and ability far beyond that possessed by the average mechanic who has had no experience in this class of work. He who attempts the construction of a car without the requisite knowledge and experience must necessarily fail in a costly experiment.

HOMEMADE BUCKBOARD WITH 1 1-2 H. P. MOTOR, BUILT BY ST. LOUIS BOY.

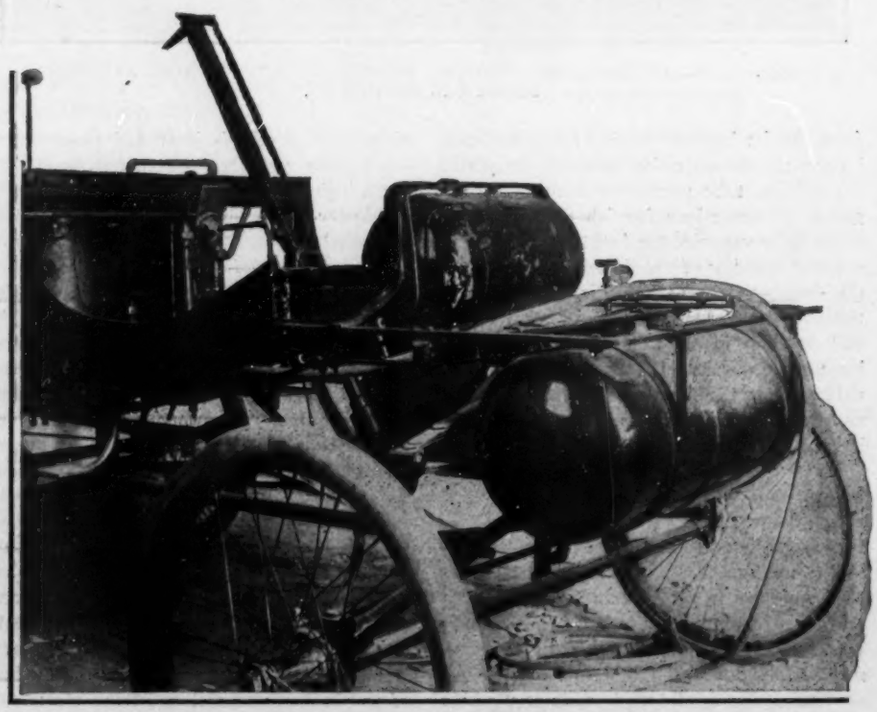


FIG. 8.--DETAILS OF EXTENSION FRONT, SHOWING GASOLINE AND AIR TANKS

Missouri Boy's Buckboard.

The "car" illustrated in the engraving herewith is not an imitation of the latest Mercedes model; but it will go and keep on going at a good speed, which probably means as much or more to the boy who owns it as the mile-a-minute gait of a big car does to its owner.

This little machine is driven by an air-cooled motor of 1 1-2-horsepower taken from an old Thomas motor bicycle, driving to one rear wheel through an eight-to-one reduction. The wheels turn independently of each other, and as but one of them is driven, no differential gearing is required. Speed is controlled by throttle. It is said that the machine is capable of making a speed of eighteen miles an hour, and that it will carry two passengers. It weighs 225 pounds; the wheelbase is 66 inches and the tread 30 inches. The wire wheels are 28 inches in diameter and are fitted with steel rims and cushion tires.

Before being placed on the little automobile, the motor was used for a year on the bicycle of which it was originally a part; it has been in use on the four-wheeler for eighteen months. A St. Louis, Mo., boy is the proud possessor of the machine, which he calls by the startling name of "Little Red Devil."

Persons unaccustomed to automobiling are usually surprised, on taking their first ride, to find how much cooler the weather seems to grow after the car has run a few miles at fair speed. On a comfortably warm day a person riding in an automobile will frequently feel the need of an extra outer garment of some sort.

GUIPPONE OF THE FRENCH TEAM ROUNDING A CORNER IN THE INTERNATIONAL MOTORCYCLE RACE.

Austria Wins International Motorcycle Race.

Special Correspondence.

PARIS, June 26.—France was defeated in the International Motorcycle Cup Race, held on the St. Arnoult circuit, yesterday. Austria captured the trophy, as Wonrick, a member of her team, won in 3:05:15, actual running time. The circuit is in the Department of Seine and Oise, a short railroad journey from Paris. It is 54 kilometers long and includes four controls. Deducting neutralizations the circuit is 47 kilometers, and as this was covered five times, the total distance in which running time was figured was 235 kilometers or 146.02 miles. There are a number of sharp turns on the course. Demester, of the French team, the holder of the cup, was regarded as the favorite. He finished second in 3:13:02, but was disqualified and second place was given to Guippone of the French team, who finished in 3:35:02.

Demester had the fastest machine in the race, as he was timed on the kilometer at the rate of 66.5 miles an hour. A series of mishaps marked his course. On the first round he fell while taking a sharp turn. On the second his belt becoming slack and had to be tightened; by ill-luck he took up too much of the slack and finally had to change it for his spare one. On the third and fourth rounds he was troubled with punctures, one of which so seriously damaged the rim that he had to change the back wheel. At the end of the race this was objected to and brought about his disqualification.

Wondrick, the winner, drove a two-cylinder Laurin-Klement machine, of 72mm. bore and 85mm. stroke. It was fitted with magneto, belt transmission, and Continental tires. The machines of the French team were described in my prevous report.

France, Germany, England and Austria were each represented by a team of three machines, which were started off at 10 o'clock in the morning, with an interval of two minutes between each competitor. Of the twelve competitors eleven finished the first round, six the second and third, five the fourth round, and three the fifth and final round. Two Austrian, two French and one English machine finished the fourth, and one Austrian and two French the final lap.

Although only in its second year, the International Cup, offered by the Motorcycle Club of France, has attained a remarkable importance, being indeed the equivalent in the motorcycle world of the Gordon Bennett Cup in the automobile world. As in the great classic, each nation selects, by a preliminary race, a team of three machines to represent it in the final contest held on the circuit chosen by the club holding the cup. In 1904 France won its own trophy; thus this year the race was run on the St. Arnoult circuit. Next year the race will probably be run in Austria.

RACES AT PUEBLO JULY 4.

Special Correspondence.

PUEBLO, CAL., July 6.—Among the various Fourth of July celebrations at this place were the automobile races and parade.

About 1,500 enthusiasts witnessed the races in the afternoon at Boulevard Park, in which a score of cars participated.

The events were interesting and keenly contested. Ten events made up the program, the last being run in the dark. Following the contests at the park, an illuminated parade was held. About 50 cars were in line, and all carried burning torches of red, white and blue.

The most interesting events were the two three-mile races, in which J. A. Meserole, Winton, and Fred Knebel, Peerless, were the principal contenders. Both men raced evenly for almost the entire distance, Meserole winning by a small margin in each event.

The two-mile race for touring cars carrying four persons, was won by Knebel in an easy fashion.

Automobiles are passing through the township nearly every day. The first thing we know farmers will be buying autos.—*Gladstone (Mich.) Delta.*

L. B. Robinson is putting in an air pump in the boiler room of the north side for blowing up his automobile tires.—*Adrian (Mich.) Times*

WONRICK, THE AUSTRIAN, WHO WON THE INTERNATIONAL MOTORCYCLE RACE ON HIS LAURIN-KLEMENT MACHINE.

Aix-les-Bains Touring Car Competition.

From Our Own Correspondent.

AIX-LES-BAINS, France, June 26.—Almost ten thousand dollars in prizes, a perfect organization, a beautifully mountainous country and a selection of the finest touring cars Europe can produce have made the Aix-les-Bains contest the most important of the season. The meeting was carried out entirely under the new rules of the Automobile Club of France, and consisted of four classes, in each of which four prizes were offered, and in addition a hill-climbing contest for the four classes, three prizes being offered for each.

Thirty-nine cars started in the competition—a splendid set of vehicles—varying from a 60-horsepower Mercedes, owned by Baron de Rothschild, to a modest de Dion Bouton of 12-horsepower.

A weight of 1,543 pounds was allowed for automobiles entered in the first class, 2,204 pounds for the second, 2,865 pounds for third and fourth classes. After satisfying the officials that they did not exceed these weights without passengers, each car was weighed again, the first class with two passengers and the three others with four persons each. Passengers, together with their baggage, had to weigh 220 pounds each for third and fourth classes, 176 pounds for the second and 154 pounds for the third, weight being, of course, made up with ballast.

After weighing-in operations having been terminated, all cars were enclosed in the big specially constructed open-air garage, resembling the weighing-in ground of an important racecourse, and no competitor was allowed to touch his vehicle until five minutes before the time of starting, and was allowed but one hour at the close of the day for filling up tanks, oiling and cleaning.

The first of the four days' touring test was particularly difficult for both men and machines. Torrents of rain had fallen the previous day, and, despite non-skid bands, these wild mountainous roads of Savoy, running over mountain passes, along the edge of precipices and by the side of ravines, with frequent grades of from 7 to 14 per cent., offered a formidable task to the competitors.

From Aix-les-Bains to Chambéry the beauty of the scenery was the only feature of the road. Then a ten kilometer run up the narrow winding road on the Col du Frêne brought the competitors to an altitude of 1,200 meters, below them being the shimmering blue waters of Lake Bourget, and right ahead the solid mass of the Grande Chartreuse, up which a climb had to be made, followedby a descent of 400 meters and again a climb up to a height of 1,300 meters by the Col du Cucheron.

Wild scenery, rocky mountains, covered with a hardy vegetation, roads apparently hacked out of the cliffside with consummate skill, tunnels and precipices, which, should a slip be made, would afford the rare sensation of a drop of several thousand feet—such were the incidents of the 115 miles to be covered the first day. Notwithstanding the difficulties, out of the twenty-nine starters a total of twenty-seven finished the entire course.

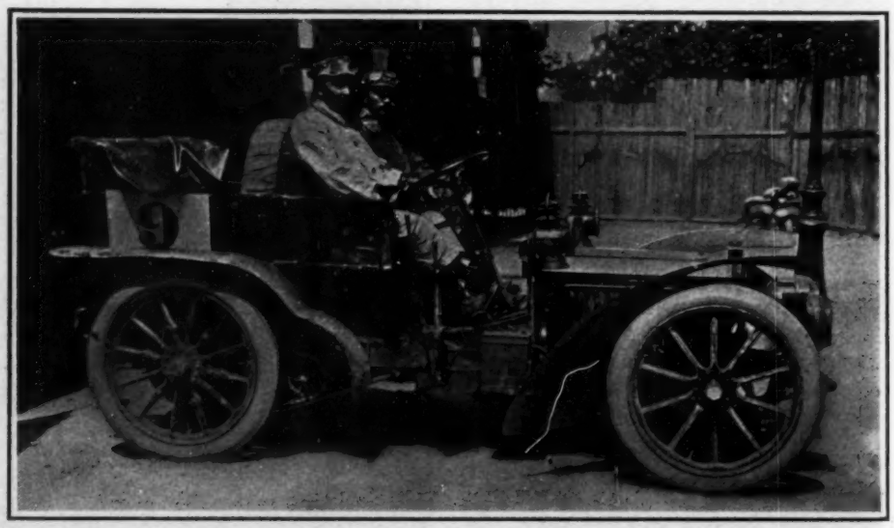
Of this number twenty-six were ready for the start the next morning. One vehicle, having been in collision with a cow when traveling at 20 miles an hour the previous day, was unable to start on the second day's run.

After the previous day's wild ride this was, in comparison, but a billiard table run of 200 miles, the scenery, however, being the finest obtainable in this most picturesque part of France. In the morning twenty-four of the twenty-six competitors finished, and in the afternoon twenty-four cars started and finished.

The third day was another wild mountainous run of 125 miles, taken in two stages. First of all in the Isère Valley, then an ascension of the Col de Pamie. In the afternoon a climb up the Col des Aravis, where the road serpentines along the sides of ravines, passes under tunnels cut of the granite rock, crosses over wild mountain torrents until it reaches a plateau from which Mont Blanc is seen standing out as clearly as if it were but seven miles away. Finally a run down the mountain sides to Aix-les-Bains, which was reached safely by all but six of the twenty-four starters.

The fourth day was devoted to hill-climbing tests, in the classification for which cylinder capacity and weight of car were taken into consideration. In the second class, cars weighing not more than 2,204 pounds, an 18-horsepower Peugeot obtained first place with 10,483 points, a 15-horsepower de Dion Bouton second position with 9,828 points, and a 15-horsepower Darracq third place with 6,356 points.

Two days' auto-boat racing on Lake Bourget, a battle of flowers and competition of decorated cars and a splendid exhibition of high-grade touring automobiles were additional features of this fashionable automobile gathering.

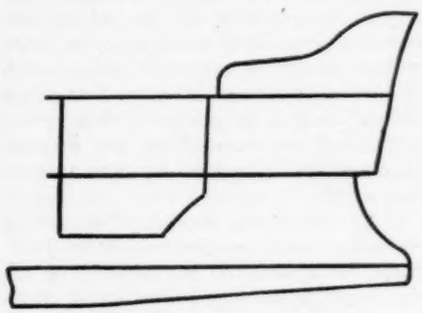


PEUGEOT CAR WHICH WON FIRST PLACE IN SECOND DIVISION AIX-LES-BAINS TOURING CAR COMPETITION.

Dust and Body Design.

The dust nuisance is one that is not appreciated at its full value by persons who are actually automobilists, or who have not occupied a tonneau seat for a ride of some length over ordinary roads. For a short run the dust does not amount to very much, as a rule; but on a ride of considerable distance in a car unprovided with means for keeping the dust out, it is a different matter. Dust has a faculty for penetrating everywhere, and there are few combinations more desirable than a hot day and a cloud of dust. Automobile builders are awakening to the fact that when the purely mechanical problems have been solved there are still other problems which directly concern the comfort of the passengers of the car; and as one result, many ideas have been hatched with the object of protecting the occupants of the car from dust. In many cases this is attempted by the use of shields or deflectors of various designs; the Cape cart hood, folded back, does much to keep down the dust, and others begin at the beginning and design the body curves so that, without extra attachments, they will deflect the air currents, and consequently the dust clouds, downward instead of upward. A body designed with this end in view is that of the 40-horsepower Columbia gasoline car, built by the Electric Vehicle Co., of Hartford, Conn., the parts involved being shown in the accompanying line engraving. The rear of the body is "cut

under" a little below the seat line, and then curves downward and toward the rear, instead of following the usual custom of either carrying the rear line straight down at a slight forward angle, or giving it a



COLUMBIA BODY CURVE.

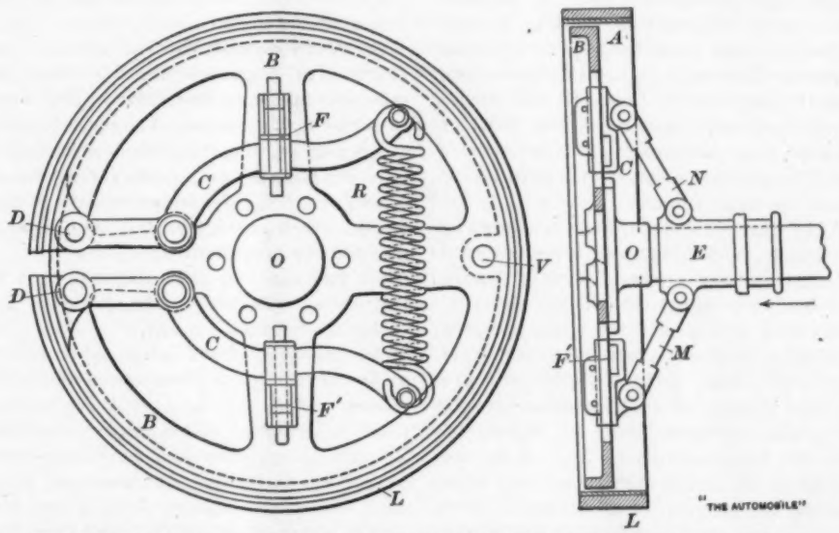
forward downward curve. The manufacturers have found that the air currents in the rear of this body have a downward, instead of an upward, tendency, sending the dust down to join the cloud that follows low down, in the wake of the car.

Brouhot Clutch.

The manufacturers of the Brouhot car are large makers of stationary engines and agricultural machinery in France. Although they only entered the automobile industry three years ago, they have made a good showing, and are among the manufacturers of high-grade cars. The Brouhot cars, which bear some marks of the experience of the makers in other classes of mechanical work, are very strongly built and have in almost every detail a character of their own and an individuality showing what might be called a "family likeness" to the heavier types of agricultural implements made by the same concern.

The clutch, for instance, which is remarkable for its smoothness of operation, its power and its lightness, is built up of steel plates and steel castings, and has a general outline that is not to be found elsewhere in most other clutches. The flywheel is turned cylindrical internally to accommodate a large split ring which corresponds to the movable member of the ordinary cone clutch.

Referring to the accompanying illustration of the clutch, *B* is a steel casting in the form of a four-armed plate, rigidly secured to the forward end of the primary shaft of the change speed gear; this plate carries the entire clutch mechanism. Fulcrumed on



END ELEVATION AND VERTICAL SECTION OF BROUHOT EXPANDING RING CLUTCH.

it are two suitably shaped levers *C* hung at one end on pivots *D*, the pivots projecting from the ends of the split ring *L*. When the free ends of the levers are drawn toward each other the ring is caused to expand, thus binding in the flywheel. In order to make this binding constant, a stiff coil spring *R* is attached to the free ends of the levers, its tension tending to draw them together and keep the clutch normally in engagement. Great leverage is obtained by placing the pivots considerably nearer to the ends of the clutch ring than to the springs, and the grip of the clutch is therefore very powerful. In order to disengage the clutch the toggle levers *M* and *M* are pivoted to the sliding collar *E* and to the clutch levers at *F*. When the collar is pushed toward the clutch by means of a suitable fork and a pedal, the toggle arms force the ends *D* of the clutch levers toward each other, thus decreasing the diameter of the split ring and moving it away from its contact with the flywheel. The split ring is lined with camels' hair felting and is said to be practically indestructible.

Setting a spark plug in a recess tends to prevent sooting; but if the recess is too deep the ignition may be retarded at high speeds.

American and Foreign Automobile and Auto-Boat Fixtures

AMERICAN.

Note—(*) indicates National Circuit dates for which sanctions have been granted.

July 17-18—Second Annual Climb to the Clouds, and White Mountain Tours, Mount Washington, N. H.
July 11—Glidden Trophy Tour Start, New York City.
July 15—Morris Park Track Meet, New York City.
July 22*—Empire City Track Meet, Yonkers, N. Y.
July 22—Race Meet, Cape May, N. J.
July 29—Morris Park Track Meet, New York City.
July 31—Automobile Day, Lewis and Clark Centennial, Portland, Oregon.
Aug. 4-5*—Detroit Race Meet, Grosse Point Track. Motor Club of Detroit.
Aug. 11-12*—Cleveland Race Meet, Glenville Track. Cleveland A. C.
Aug. 14-19—Second Annual Automobile Carnival, Long Branch, N. J.
Aug. 18-19*—Buffalo Race Meet. A. C. of Buffalo.
Aug. 19—Auto Boat Cruise, Albany to St. Lawrence River.
Aug. 24-26—Auto Boat Races for A. P. B. A. Challenge Cup, Chippewa Bay.
Sept. 4*—Boston Race Meet, Readville Track. Massachusetts A. C.
Sept. 4, 6, 9—National Auto Boat Carnival, Hudson River, New York City.
Sept. 9*—Providence Race Meet. Rhode Island A. C.
Sept. 16*—Race Meet, Syracuse, N. Y.
Sept. 22-23—Race Meet, Baltimore, Md.
Sept. 23—Elimination Trials for Vanderbilt Cup Race, Long Island. A.A.A.
Sept. 23*—Morris Park Track Meet, New York City.
Sept. 29*—Poughkeepsie Race Meet, N. Y.
Sept. 30*—Empire City Track Meet, Yonkers, N. Y.
Oct. 14—Vanderbilt Cup Race, Long Island. American Auto. Assn.

FOREIGN.

July 9-22—Ostend Automobile Meeting, Belgium.
July 10-20—English Auto Boat Carnival, English Channel and Thames River. A. C. of Great Britain.
July 15—Calais-Ramsgate Auto Boat Race, English Channel. A. C. of Great Britain.
July 15—Boulogne-Folkstone Cross-Channel Boat Race. A. C. of France.
July 16—Mt. Cenis Hill Climb, Italy. A. C. of Turin.
July 19—Automobile Speed Trials, Brighton, England. A. C. of Great Britain.
July 27-29—Blackpool Automobile Races, England.
July 20-26—Paris-Trouville Auto Boat Race, River Seine, France. A. C. of France.
July 27—Gaston Menier Auto Boat Race, Trouville, France.
Aug. 6-7—Circuit des Ardennes, France. A. C. of France.
Aug. 10—Gaston Menier Auto Boat Race, Trouville. A. C. of France.
Aug. 10-16—Herkomer and Bleichroder Races, Munich, Bavaria.
Aug. 11—Anthony Drexel Cup for Auto Boats, Trouville, France.
Aug. 11 or 18—English Quarterly 100-Mile Trials. A. C. of Great Britain.
Aug. 14-19—Motorcycle 1,000-Mile Reliability Trials. Auto Cycle Club of Great Britain.
Aug. 19—English Van Trials, Light and Heavy Vehicles. A. C. of G. B. and I.
Sept. 1—Lake Geneva Auto Boat Races, Switzerland.
Sept. 8-10—Brescia Meeting. Auto Boat Races on Garda Lake, Italy.
Sept. 11—Harmsworth Cup Auto Boat Races, England.
Sept. 11-17—Padua Race Meet and Auto Boat Races, at Venice, Italy.
Sept. 12-14—Auto Boat Meet, Lake Luzerne, Switzerland.
Sept. 14—English Tourist Trophy Competition, Isle of Man. A. C. of G. B. and I.
Sept. 18-Oct. 3—English Reliability Trials. A. C. of Great Britain.
Oct. 1—Chateau-Thierry Hill Climb, France.
Oct. 15—Gaillon Hill Climb, France.

Diary of the Transcontinental Race.*

By PERCY F. MEGARGEL.

PORTLAND, ORE., June 28.—Here at last! Stanchfield and I did not wait until we had arrived at the hotel to shake hands with each other, but went through this formality immediately upon passing a little sign on the railroad crossing reading "City Limits." The last day's run—fifty-five miles—was through the beautiful Willamette Valley, from Salem to Portland, and the roads were in very fair condition.

Leaving Cottonwood, Idaho, on Monday, June 17, we continued our journey through a desert of sage brush and lava rocks. Had dinner at Canyon Creek, a pretty little oasis, and a "right smart" dinner it was, to use a term generally adopted in the West as an expression of praise, and, to further use the Western expression, we paid "two bits" apiece for what we ate.

After some steady riding, we reached Boise City on Monday, and were tendered a reception by the local Board of Trade, and we were given the key to the city. Boise it a very pretty little city, situated in a valley and surrounded by cottonwood trees. The city itself is not visible until one has actually entered upon the streets, the groves of trees hiding all structures, save the tallest steeples. The streets are asphalt paved, and the city has a very businesslike and progressive appearance. Here we stopped at the Idanha Hotel, one of the best we have found since leaving New York. There are a number of automobiles used here, although nearly everybody rides horseback, all using the big forty to sixty-pound cowboy saddle with high back and pommel. The horses used are not the little bronchos, about which so much has been said and written, but all are large-boned and weigh 1,000 to 1,300 pounds, the Kentucky thoroughbred having been imported and extensively used in breeding.

A large Packard tonneau, the vintage of 1902, is used as a stage for "Seeing Boise." The car is equipped with a canopy top, and makes regular trips through the city and adjacent country. Like most Western cities, Boise has many saloons, most of which are open all night, and card games are in progress at all hours, yet the city is orderly and the police are seldom called upon to make arrests.

The ride from Boise to Ontario, Ore., was most disagreeable. Mile after mile *Old Steady's* path was marked by clouds of fine alkali dust that completely enveloped us, and made breathing difficult. Many ruralites, who endeavored to get a good view of their first automobile, were disappointed. After traveling seventeen miles, we were compelled to lose four hours waiting for a bridge-building gang to repair the bridge over Little Boise River before we could cross and take the Riverside ferry over Snake River for Ontario, both rivers being too deep to ford. When we reached the ferry, Mr. McConnel, the ferryman, was busy with his farm work, and his wife ferried us across. The river was high and the current swift, so it was but a few minutes before we were safely landed on the Oregon shore. After paying "four bits" for the boat ride, and making a snapshot of the ferry-keeper and her craft, we rolled on toward Ontario, where we arrived in time to spend the night.

On Wednesday we covered the trail from Ontario to Johnson's Ranch, about ten miles west of Vale Post Office. This route is used for all manner of freighting, emigrant wagons, stage coaches and mail carriers, and we were continually passing horse-drawn vehicles. The larger streams in that section are bridged, but the many irrigation ditches keep the driver busy.

We had hoped to reach the little town of Harney by Thursday night, June 22, but darkness overtook us with a deep and rocky canyon to cross, so we were forced to put up at George Buchanan's ranch, in Harney county. The next ranch below, which is owned by Mr. Buchanan's brother, is where Dr. Jackson stopped for the night on his trip across the continent two years ago. With the exception of *Old Scout*, this is the only automobile that has ever traversed this part of the country. When we rode up to the ranch, our host and hostess, like all Western people we have met, ran out to the gate to welcome us, or possibly to ascertain the source of the strange noise, and we were soon provided with an excellent supper and beds in the loft. Before retiring, however, we listened to stories of the wild animals that abound in the neighborhood. The cougar is the latest and most dreaded animal yet introduced to our attention. In addition to the rattlesnake, we were warned of the scorpion, which abounds in great numbers in the lava beds and rocks of this section.

After an early start Friday morning, we succeeded in reaching the stage station, sixty-eight miles east of Primville, Crook county, in time for supper. We arrived at the station with the stage from the East, and that from the West pulled in an hour later. There were two beds at the station, and, as the stages brought but one passenger each, Stanchfield and I were able to secure one bed between us for the night, the two passengers "doubling up" in the other. Both beds were in the same room. We had intended to stop at Riley for dinner, but the town was so small—one combination hotel, store and post-office—that we rode through the principal street and some eleven miles beyond before we knew it. It was probably just as well that we did, as we stopped at the ranch of W. B. Johnson, where our wants were well looked after, and we were served with a steaming hot dinner.

We found the Johnsons already had visitors, two Piute Indians, three squaws and two papooses sitting on the back fence as we rode up. The Indians showed much surprise at our little car, the old one immediately concluding that it was the work of the "bad spirit," and would have nothing to do with it. I tried to get a photograph of him sitting in the machine, but he would not have it, and covered his face with his hands when I attempted to take a snapshot of him.

On Saturday we succeeded in making eighty-four miles, stopping at Hotel Poindexter, Primville, for the night. We left the stage station early, with the intention of covering at least 150 miles, but rain paid us another visit, and shower followed shower until the roads were almost bottomless. So heavy had they become early in the afternoon that the freighters were unable to haul their loads, and the big six and eight-horse teams were unhitched and stabled for the remainder of the day.

After a hasty toilet and a hearty supper, we replenished our gasoline and oil supply, and, late as it was, we posed for several local camera fiends, including two women photographers, who were out for the prizes offered by the Olds factory for photographs of the competing machines en route.

With an early start Sunday, we ran to within five miles of the summit of the Cascade mountain range. One hour out of Primeville we sighted the three snow-capped peaks known as the Sisters, and said to be the highest points in the Cascade range. We left Primeville by way of the Valley road, and throughout the day we ran through pine and fir woods, for which Oregon is famous, and the entire trip was one continuous hill-climb, and the roads heavy with sand.

About thirty-eight miles from Primeville we came to the little town of Sisters, situated in the valley, and apparently under the protection of the three towering peaks of that name. Here we found a supply of gasoline that had been shipped on ahead. It seemed that the entire population of the town had turned out to meet us; men, women and children crowding each other in their efforts to get near our little runabout. Leaving Sisters, we ran into the thickest of the forests, the trees being so close in many places that daylight was almost shut out, and the trail so narrow that in several instances we ran between trees with our hubs almost touching on either side.

The raise from Sisters to Cache Creek, where we stopped for the night, is 1,500 feet, and it was steady up-hill work. Occasionally we would pass a number of cowboys on their wiry mustangs, bound for town, and once we passed a flock of about 3,000 sheep, going to their summer range up in the mountains.

Cache Creek is the eastern end of the toll road, and a big gate with lock and key

* *Concluded from page 782, issue of June 29.*

bars the way until toll is paid. The charges are: Eight-horse team, $4; six-horse team, $3; saddle horses, 50 cents; pack horses, 35 cents; loose horses, 15 cents; cattle, 10 cents, and sheep and hogs, 3 cents a head. There might have been some controversy as to the charge for our car, as the gatekeeper was puzzled. We had a 7-horsepower engine, but some of the freighters classed us as road-hogs, and as such we were entitled to passage at 3 cents a head. However, the manager of the Wilamette Valley and Cascade Mountain toll road had arranged for this in advance by sending orders "No toll for *Old Scout* or *Old Steady*."

This section of the country is as fine a hunting ground as can be found in the country. Bear can be found at any time within fifteen minutes' walk of the ranch, and are frequently shot from the ranch windows, while elk, mule deer and black-tail deer are found in abundance. Wild cats weighing 100 pounds and more are numerous, as are cougar, mountain lions and lynx. Their fur at this time of the year is not at its best, and there is little hunting going on. In the winter this entire section is snowed in, the houses and outbuildings being entirely buried for months, and the inhabitants going down in the valley to live until spring.

Encamped at the toll-gate for the night were two freighters and a sheep man, their horses giving out on the long climb during the day, and they were obliged to lay over and rest up until the following day. Oregon is the hotbed of the cattlemen and sheepmen's difficulties, and the feeling is intense. Two weeks ago cattlemen and their friends killed several head of sheep and threatened the lives of the herders, until they left the country. The state has set aside a sum of money as a reward for the apprehension of the guilty parties, but up to date no arrests have been made, and it is unlikely that any will be made, as the first arrest means more bloodshed. As we stopped first at a cattle ranch, and next at a sheep ranch, we heard both sides of the story, and, to prevent trouble, held our peace.

We left Cache Creek at 6 o'clock Monday morning, having been told that after a two-mile climb we would be at the highest point in the Cascades. We climbed, and climbed, for the balance of the morning, our mileage in that time being more than forty. It is true that we occasionally descended, but only to find another mountain to climb.

There was one little funny incident connected with our mountain running that will bear repeating. We had been advised to be sure and hitch a tree to the rear of our car in descending Seven Mile Hill, as the third mountain in the Cascade range is known, and we followed instructions to the best of our ability. When we had reached a point as high as we thought possible to attain, we stopped and looked around for a Christmas tree. We soon located one, but we had no axe. The nearest approach to this handy instrument was a cold chisel, and we cut our tree with this and a monkey wrench. Then, chaining it to our rear axle, we let things slide. That particular hill, while pretty steep, was only about a hundred feet long, and no sooner had we rounded the turn at the foot than we found a hill two hundred feet long to climb. *Old Steady* had resented the introduction of Santa Claus all along, and positively refused to haul Stanchfield, myself and the Christmas tree to the top, so we walked and pulled the tree after us. It was a hard climb, but we were soon at the top. Then we piled in for what we thought would be the seven-mile coast we had heard of, but it was only another hundred-foot slide, and then we came to a three hundred-foot climb. This time *Old Steady* refused to haul the tree to the top, even with both of us walking, so there was nothing to do but lift the muddy tree into the rig and let it ride, while we walked. Once more we thought we had reached the decline and piled in, with Santa Claus dragging, but again it was only a short coast, with a still steeper and higher hill to climb, so we cast our tree aside and went the rest of the way, including the seven-mile stretch, with only brakes and reverse. Everything went well until we were descending the sixth mountain range, when *Old Steady* commenced to skid. You who have experienced some skidding on smooth asphalt pavements have no idea of the sensation of a skid down a fifty per cent. grade in the Cascade mountains, thirty miles from the nearest house. Down, down we came, first the front wheels ahead, and then the rear. Finally the front wheel struck a moss-covered rock by the roadside and climbed over. The other front wheel, not to be left behind, followed suit, as did one rear wheel. When we first struck, both Stanchfield and myself were not only thrown out, but pitched bodily clear across the road into the bushes, followed by most of our trappings. The car, suspended by one rear wheel and the right step, which had caught in some bushes, hung over a 200-foot cliff, and Stanchfield and myself, rubbing the mud out of our eyes, sat on the side of the road, wondering why it did not go all the way over. A large prairie schooner, carrying a number of men and women, hove in sight about this time, and, between the lot of us, we were able to get it back in the road and continue our uncertain descent. All this time it had been raining hard, and we were soaked to the skin. My rubber coat was a mass of shreds, and Stanchfield's was almost as badly off. Our corduroy trousers were caked with mud, and our feet and legs were soaked. This is the manner in which we eventually arrived at Sweet Home, and I can tell you that no home meal ever tasted any better than that served up to the two half-starved, cold and wet automobilists.

Leaving Sweet Home, we had traveled but little more than a mile when we were surprised by a young lady, who handed a bouquet of roses to Stanchfield. This surprise was a pleasant one, and it brightened Stanchfield's muddy face wonderfully. A few miles further, and more flowers, together with something more sustaining—a basket of fresh cherries. From that time until Salem was reached flowers were given us every few miles, and *Old Steady* took on holiday attire. Before arriving at Salem, one of our rear tires gave way, due to the constant rubbing against the sharp rocks along the roadway, and we put on our last outer casing and inserted a new tube. The roads here were numerous, quite different from our experience of some days past, when we had but one trail to follow, and this new state of affairs resulted in our getting lost and taking a ten-mile run unnecessarily. Streams were also numerous in this section, but with one exception were bridged. The one stream we were obliged to ford gave us a bit of trouble. Stanchfield got out, and I attempted to rush it at full speed. It was pretty wide, and deeper than I imagined, and as a result *Old Steady* ran only about midway when it came to a stop with muffler and rear wheels under water, and only the top of the front tires above. I had an abundance of rope aboard, so I threw the lifeline to Stanchfield, and, with the assistance of two farm boys, I was hauled out without getting my feet wet. A turn of the starting crank set the motor running as merrily as ever, and we were off once more, arriving at Salem without further mishap.

The fifty-five mile run from Salem to Portland was made in fairly good time. We kept our chains on both rear tires, and rode along at a fifteen-mile clip, stopping for luncheon at Aurora. Here we discovered a puncture, which necessitated the insertion of our last inner tube, but then Portland was almost in sight. Harry Keats, of the Keats Automobile Company, Portland agents for the Olds and Pope-Toledo, brought a number of friends out as far as Oregon City, to meet us and escort us into Portland.

We found *Old Scout*, the machine that had defeated us, safely stored in the Keats garage. It plainly showed the hard knocks it had received en route. We also found the caps worn by Huss and Weigle on exhibition in a local hat store, labeled with the signatures of the two Detroiters. After purchasing a supply of clothing, we went to a Turkish bath for the night, the first Turkish bath I had indulged in since leaving New York.

We were recognized in the shoe store we patronized, and nothing would do but for us to exchange our old shoes for new, the old ones going in the window for exhibition. I am commencing to believe that possibly I do belong to the freak family, a belief strengthened by the numerous mailing cards sent me, usually containing in bright letters of scarlet, "It's great to be crazy and ride around in an automobile."

Glidden Tourists Start from New York.

FAVORED by the pleasantest weather conditions, the July sunshine tempered by a cool breeze, the start of the Charles J. Glidden trophy tour took place on Tuesday morning, July 11, the cars commencing their 1,000-mile journey from the Automobile Club of America clubhouse on Fifth avenue, New York. Thirty-one cars set out before 10 o'clock, starting singly, in twos and threes, and in bunches, according to the inclinations and conveniences of the drivers. The earliest starter was the Packard truck, which got away at 2 o'clock in the morning. The Packard truck shares with a Knox waterless truck the honor of carrying the baggage of such tourists as could not find room for their hand baggage in the touring cars. At 6 o'clock the tourists commenced to get under way, and before 7 o'clock half a dozen were on the road, Walter C. White, in a steam car, being the first to get away.

Notwithstanding the early hour, the corner of Fifth avenue and Fifty-eighth street, which has been the starting point of so many memorable automobile tours, presented an animated appearance, a considerable crowd of interested persons having gathered to see the tourists get away, and there were the usual questions among the spectators as to "what race is it?" and speculations as to the most likely looking "racers."

An amusing incident took place when a heavily loaded beer truck came down the avenue and slowly made its way past the line of waiting cars. Half way down the line someone shouted to the driver: "Hey, you're going the wrong way!" The driver hesitated for a moment, and was on the point of shutting off his power, when he awoke to the joke and proceeded with a grin.

One of the tourists was moved to remark feelingly that his grip was on the Knox truck, and he hoped the springs of the machine were good, for the sake of the contents of the grip.

Charles J. Glidden, the donor of the trophy for which the tourists are competing, was unable to get his car to New York in time to start with the others, but took an active and interested part in getting the competitors started; he will go by train to the White mountains and meet the survivors, however, and take in the "Climb to the Clouds."

Cars of the larger class formed a surprisingly small proportion of the total number. The largest car, the 50-horsepower Panhard of Sydney E. Hutchinson, of Philadelphia, was a notable exception. The light touring cars and runabouts were very much in evidence, and if the line-up was any indication, these machines are increasing in popularity. The White steam cars, as usual, made a splendid showing, eight of them lining up at the start, while another, with Elliott C. Lee, president of the A. A. A., on board, will join the party at Boston. Lewis R. Speare will also join at Boston, driving a Winton.

Since the publication of the entries in the last issue of THE AUTOMOBILE, the following entries were made, bringing the total number to forty-two, exclusive of the baggage trucks:

Robert Lee Morrell, New York, Locomobile; S. B. Stevens, Rome, N. Y., Maxwell; R. M. Owen, New York, Reo; J. C. Kerrison, Boston, Mass., Cadillac; Sidney B. Bowman, New York, Clement-Bayard; Harry H. Fitch, New York, White; E. H. Cutler, Springfield, Mass., Knox; W. N. Epping, Pittsburg, Pa., White; K. A. Grout, Orange, Mass., Grout (gasoline); Julius Mehlig, New Orleans, La., Knox; Ralph Coburn, Philadelphia, Maxwell; W. Kelsey, New York, Maxwell; George H. Tyrrell, New York, White; William A. Lamson, New York, White.

Of these, two will meet the main body at Boston; one failed to appear at the starting point with his car; James L. Breese is in Europe; A. A. Grout's gasoline car was held up by the express company, but was to be started later, and six failed to start.

Joint Autoboat Races.

Instead of having two separate motorboat programs teeming with interest and splitting up the competitors, the Marine Motor Club of Great Britain and the British Motor Boat Club held a friendly meeting in London on June 19 and settled the point once and for all. It was decided to jointly arrange the events from August 7 to 12, inclusively, a fact that can only be agreeably received by all interested. Great Britain will therefore have the whole first part of the month of August devoted to power boating, as the first three days of the month are fixed for the British eliminating trials and the reliability trials. Then follows the joint week in the Solent, and to wind up with the races on August 15, in conjunction with the Royal Victoria Yacht Club. The Windermere Regatta will not take place, as the prize money is to be used towards making the Solent week a huge success. The M. M. C. has already more than a hundred members, despite its only being in existence a bare six weeks.

At the midnight hour the editor's family were awakened by a "puff, puff," which was soon drowned by the sweet strains of violin and mandolin. The company were seated in a touring car and the music, with no sounds to disturb, was heavenly. "Who they were, whence they came, or whither they went," is a mystery, and our only wish is that they will come again.—*Dekalb (Ill.) Chronicle.*

TABLE GIVING ESSENTIAL POINTS OF STATE REGISTRATION AND SPEED LAWS, EMBRACING ALL THE LAWS OF 1905.

State.	License.	Fee.	Term.	Renewal Fee.	Non-Residents.	Apply for Blanks to	Tax Required.	Law Enacted.	Speed Limits, Miles Per Hour: In Country.	In Cities.
New York	Vehicle	$2.00	Until car is sold	$1.00	Exempt if registered in own state	Secy. of State, Albany	1 seal 1 tag 1 badge	May, 1904	20	10 where closely built up; 15 elsewhere.
	Mfrs. and Dealers (for each type)	2.00	Perpetual	Duplicates, 50c.						
	Chauffeurs	2.00	Perpetual	$1.00						
New Jersey	Vehicle	1.00	Until car is sold	$1.00	Not exempt	Secy. of State, Trenton	2 tags	Apl., 1905	20	Reasonable, having regard to traffic.
	Mfrs. and Dealers	10.00	Perpetual							
Massachusetts	Vehicle	2.00	Until car is sold	$2.00	Exempt for 15 d. if reg. in own state or territory	State Highway Com., Boston	2 tags	May, 1905	15	10.
	Mfrs. and Dealers	10.00	Perpetual							
	Chauffeurs	2.00	One year	50c.						
Connecticut	Owners	1.00	Perpetual		Exempt if registered in own state	Secy. of State, Hartford	2 tags	June, 1905	20	12.
Rhode Island	Vehicle	2.00	Until car is sold		Not exempt	Secy. of State, Providence	1 tag	Apl., 1904	None	Not exceeding common traveling pace.
	Mfrs. and Dealers	10.00	Perpetual							
Maine	Vehicle	2.00	Until car is sold	$2.00	Exempt if registered in own state	Secy. of State, Augusta	2 tags	Mar., 1905	15	8 in closely built up portions.
	Mfrs. and Dealers	10.00	Perpetual							
	Operators	2.00	Until revoked							
New Hampshire	Vehicle	3.00	Until car is sold	$3.00	Exempt if regis-	Secy. of State,	2 tags	Mar., 1905	20	8 in closely built up por-

Rhode Island	Mfrs. and Dealers..... 10.00	Perpetual	.....		Secy. of State, Providence	1 tag	Apl., 1904	None	Not exceeding common traveling pace.
Maine	Vehicle ..... 2.00 Mfrs. and Dealers..... 10.00 Operators 2.00	Until car is sold Perpetual Until revoked	$2.00	Exempt if registered in own state	Secy. of State, Augusta	2 tags	Mar., 1905	15	8 in closely built up portions.
New Hampshire	Vehicle ..... 3.00 Mfrs. and Dealers..... 10.00 Operators ..... 1.00 Chauffeurs 5.00	Until car is sold Perpetual One year One year	$3.00 ..... $1.00 $5.00	Exempt if registered in own state	Secy. of State, Concord	2 tags	Mar., 1905	20	8 in closely built up portions.
Vermont	Vehicle ..... 2.00 Mfrs. and Dealers..... 10.00 Operators ..... 2.00 Chauffeurs 2.00	Until car is sold Perpetual One year One year	$2.00 $2.00 $2.00	Exempt if registered in own state	Secy. of State, Montpelier	1 tag	Dec., 1904	15	10 in closely built up sections.
Pennsylvania	Vehicle ..... 2.00 Operators 3.00	Not stated Until Dec. 31	..... $3.00	Not exempt	Prothonotary of County Treasurer of county	1 tag	Apl., 1903	20	8.
Delaware	Vehicle 2.00	Not stated	.....	Exempt for 48 hours	Secy. of State, Dover	1 tag	Apl., 1905	20	8 1-2 in closely built up portions; 10 elsewhere.
Maryland	Vehicle 1.00	Not stated	.....	Not exempt	Secy. of State, Annapolis	1 tag	.....	10	6 in closely built up portions.
District of Columbia	Operators	Perpetual	.....	Not exempt	Board of Examiners of Steam Engineers	1 tag	Apl., 1903	15	12; 6 crossing car tracks.
Indiana	Vehicle ..... 1.00 Mfrs. and Dealers..... 1.00 (for each type)	Until car is sold Until car is sold	..... Duplicates, 50c.	Exempt if registered in own state	Secy. of State, Indianapolis	1 tag	Mar., 1905	20	8 in closely built up portions; 15 elsewhere.
Michigan	Vehicle ..... 2.00 Mfrs. and Dealers..... 2.00 (for each type) Chauffeurs 1.00	Until car is sold Until car is sold Not stated	$1.00 Duplicates, 50c.	Exempt if reg. in own state or foreign country	Secy. of State, Lansing	1 seal 1 tag 1 badge	June, 1905	25	8 in closely built up portions; 15 elsewhere.
Wisconsin	Vehicle ..... 1.00 Mfrs. and Dealers..... 5.00	Until car is sold Perpetual	50c.	Exempt if registered in own state	Secy. of State, Madison	1 tag	June, 1905	25	12.
Iowa	Vehicle 1.00	Until car is sold	.....	Exempt if registered in own state	Secy. of State, Des Moines	1 seal 1 tag	Apl., 1905	20	10 in closely built up portions; 15 elsewhere.
Minnesota	Vehicle 2.00	Not stated	.....	Not exempt	State Boiler Inspector	1 tag	Apl., 1903	25	8 in built up portions.
Nebraska	Vehicle 1.00	Until car is sold	$1.00	Exempt if registered in own state	Secy. of State, Lincoln	1 seal 1 tag	Jan., 1905	20	10 in built up portions; 15 elsewhere.
South Dakota	Vehicle 1.00	Until car is sold	$1.00	Exempt if registered in own state	Secy. of State, Pierre	1 seal 1 tag	 1905	20	10 in built up portions; 15 elsewhere.
Washington	Vehicle 2.00	One year	$2.00	Exempt if registered in own state	Secy. of State, Olympia	1 tag	Mar., 1905	24	12 in built up portions.
California	Vehicle ..... 2.00 Mfrs. and Dealers..... 2.00 (for each type) Chauffeurs 2.00	Until car is sold Perpetual Not stated	$1.00 Duplicates, 50c.	Exempt if registered in own state	Secy. of State, Sacramento	1 seal 1 tag 1 badge	Mar., 1905	20	10 in built up portions; 15 elsewhere.
West Virginia	Owners 2.00	Not stated	.....	Not exempt	Auditor of State, Charleston	2 tags	.....	None.	
Alabama	Owners ..... .25	One year	25c.	Not exempt.	Probate Judge of County	None mentioned	Oct., 1903	8	

Upon application, the secretaries of state furnish printed blanks to be filled out and returned with fee; they also furnish the required seals and badges, and sometimes the number tags to be attached to the car. Registration and driving licenses must always be carried on the car, unless a seal or badge is furnished to take their place. None of the state law exempts from registration cars registered in municipalities or that are not registered in the state, territory or federal district in which the owner lives. All the laws have special provisions relating to speed and conduct when passing horses on the road, most of them requiring the automobilist to stop when signaled. Nearly all of them require speed to reduce on curves, descents, bridges and road intersections. All states require good and sufficient brakes; either horns, bells or whistles, and one or more lighted lamps from one hour after sunset to one hour before sunrise; also one light showing red toward the rear.

Letter Box

Inlet and Exhaust Valves.

Editor THE AUTOMOBILE:

[229].—Kindly inform us what size inlet and exhaust valves will give best results on a four-cylinder gasoline motor of 3 3-4-inch bore and 4-inch stroke, running at 1,200 revolutions a minute. Also the best cam setting for the mechanical inlet and exhaust valves. How long should the inlet valve be held open on the suction stroke?

K. A. C.

Harrisburg, Pa.

A good rule for calculating valve dimensions has already been published in the Letter Box department, the last time in the issue of June 22, in reply to query No. 215. If it is desired to make both valves the same size the inlet valve may be made of the same size as the exhaust valve.

The exact timing of the valves is best ascertained by experiment, as it is often found that a slight change of timing causes a marked improvement in the running of the engine, even though the valves were originally set correctly, according to theory. A good starting point, and one that should be very nearly correct, will be obtained by setting the exhaust valve so that it will commence to open when the piston has made nine-tenths of the power stroke, in the case of your engine, 3.6 inches, and close on the center. The inlet valve should commence to open at the commencement of the suction stroke, just as the exhaust valve closes, and should remain open for from five to ten per cent of the compression stroke, or, possibly, even more, though the figures given are usually found approximately correct. Experiment will give the final adjustment.

Engine Misses Explosions.

Editor THE AUTOMOBILE:

[230].—I have a single cylinder runabout and would like to know what is the cause of the engine missing explosions. The explosions are not regular, and they come in jerks, causing the engine to run very badly, and I cannot get any power or speed. I have examined the wiring, battery connections and adjusted the vibrating coils box until I have almost worn out the screws, and still I cannot locate the trouble. I have worked with it now for a week and have not found the trouble. Will you please help me out? W. H. H.

Washington C. H., O.

Your engine is apparently suffering from a severe case of inexperience on the part of the owner. It has frequently and emphatically been pointed out in the pages of THE AUTOMOBILE that constant aimless "adjusting" in the vague hope of accidentally hitting the right spot is more likely to stop the motor altogether than to do it any good. You had better take your car to someone who understands it and have it put right; and then study it carefully and learn just what are the normal conditions of operation.

Read up in the back numbers of THE AUTOMOBILE the articles that have been published for the guidance of learners, and absorb all the information you can and put it into practice.

When anything goes wrong with your machine, don't start in on a happy-go-lucky "adjusting" excursion; leave things alone unless you have some idea of what is the matter. Your reading and experience should then enable you to remedy ordinary troubles. But if you actually get stuck and have to ask someone to help you out, leave the engine alone and describe the conditions, so as to give something to work from in diagnosing the trouble.

You will doubtless recollect that in a former letter, answered in the Letter Box department in the June 22 issue of THE AUTOMOBILE, you asked for a diagnosis of engine stoppages. You do not say whether or not the present trouble is a continuation of the old one, or give any other information upon which to base an answer. While we are always glad to help out our correspondents, we cannot do so unless they give some data to work on; and they cannot do this until they know something about their machines.

Pleasures and Troubles.

Editor THE AUTOMOBILE:

[231].—I am a new man with a new automobile and, like others, have had my pleasures and my troubles with the car. I would like to know why my engine becomes heated. On a short run of two or three miles, running on the high gear, the water boils out of the tank. What is the trouble and how can I remedy it? P. G.

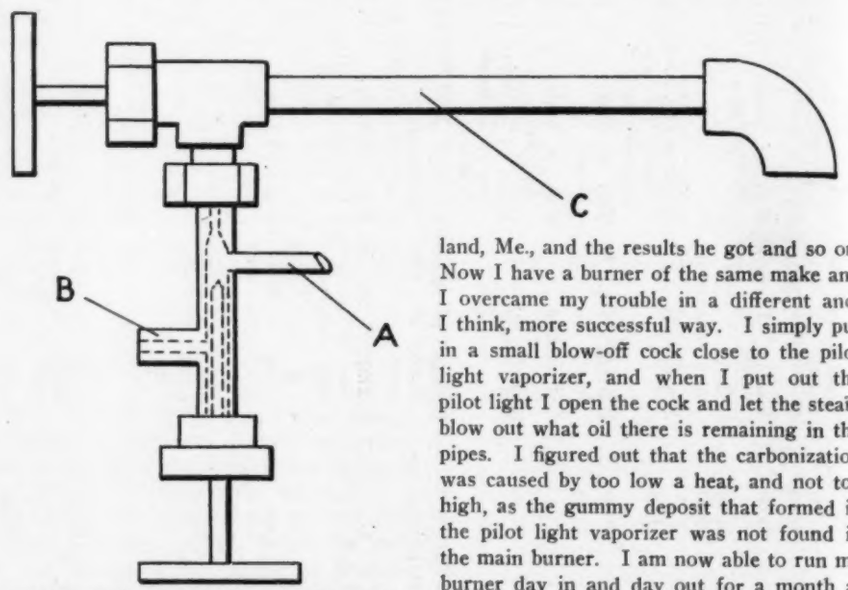
Altoona, Pa.

If your pump is in good order and running properly, there must be a partial stoppage in some part of the cooling system. Look for the obstruction and remove it; and be careful to use clean water (filtered preferably) in filling up. The radiator may be partly filled up with sediment and mud from dirty water. If so, it must, of course, be cleaned out thoroughly.

A Kerosene Burner Experience.

Editor THE AUTOMOBILE:

[232].—I noticed your article on a kerosene burner used by Mr. Babcock, of Portland, Me., and the results he got and so on. Now I have a burner of the same make and I overcame my trouble in a different and, I think, more successful way. I simply put in a small blow-off cock close to the pilot light vaporizer, and when I put out the pilot light I open the cock and let the steam blow out what oil there is remaining in the pipes. I figured out that the carbonization was caused by too low a heat, and not too high, as the gummy deposit that formed in the pilot light vaporizer was not found in the main burner. I am now able to run my burner day in and day out for a month at a time without cleaning other than the blowing out described. If I neglect the blowing out process the vaporizer promptly fouls. There is always a little leak of kerosene from the valve, and this leakage must be kept away from the vaporizer until it is thoroughly hot.



STEAM CONNECTION FOR CLEANING OUT PILOT LIGHT GENERATOR TUBE. ½

A—Kerosene supply pump. B—Steam pipe connection. C—Pilot-light generator tube.

With regard to Mr. Babcock's mileage, I can beat his record, for I have made a run of 92 miles on four and a half gallons of kerosene, actual measurement. I may say that I live in the country and use my car every day, firing up in the morning and putting out the fire at night when I am through with it. S. A.

New York.

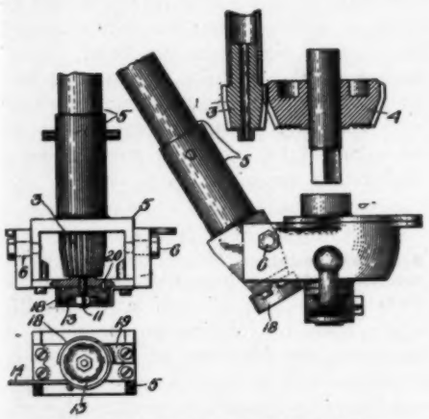
The term "four cycle" as applied to explosion motors, is a contraction of "four-stroke cycle" and means that a complete cycle or set of functions is performed every four strokes of the piston. Each forward movement of the piston is a stroke and each backward movement another; thus there are two strokes for each revolution of the crankshaft.

Patents

Tilting Steering Column.

No. 793,468.—L. J. Phelps of Stoneham, Massachusetts.

This is a steering column, the lower end of whose shaft terminates in a bevel pinion *3*, whose upper end is cut with parallel or spur teeth. It meshes with a bevel gear *4*, to whose lower end is attached the arm



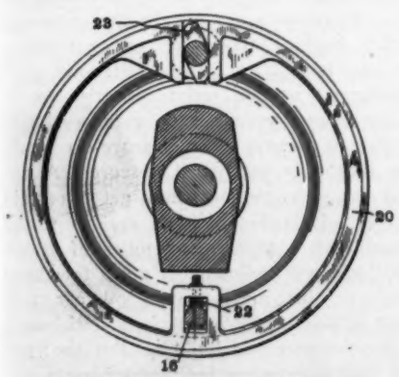
PHELPS TILTING STEERING COLUMN.

connected to the steering knuckles. This gear also has spur teeth at its upper edge, and the column is pivoted on the trunnions *6*, so that it may be tilted into a vertical position without the pinion and gear losing mesh. At the center of the steering column is the shaft *11*, to whose base is attached a wheel or drum *13*, on which a cable *14* is wound. This cable may be connected to the spark or throttle, and the shaft is held against accidental turning by the spring friction ring *18*, which bears tightly on the outside of *13*.

Double Acting Brake.

No. 793,206.—H. C. Marmon of Indianapolis, Indiana.

A double acting expanding brake ring *20*, spread for engagement by a double-



MARMON DOUBLE-ACTING BRAKE.

lobed cam *23*, and supported by a pin *16* and spring *22* in such a manner that all parts of its surface will be forced into contact with the surrounding brakedrum when in action. In case it should be preferred to support the ring from the top, the pin *16* and spring *22* would naturally be transposed, so that the weight of the ring would still rest on the spring.

Battery Grid.

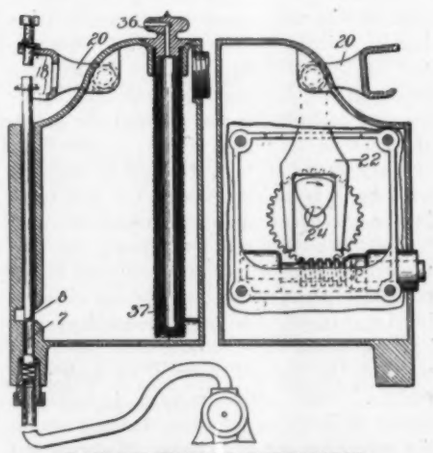
No. 793,093.—H. C. Porter of Waukegan, Illinois.

A grid for a pasted plate. It comprises essentially a series of horizontal bars in a rectangular frame, the bars being of square section and set on edge. At intervals on both sides they are crossed by diagonal lead strips, which serve to aid in retaining the active material.

Mechanical Lubricator.

No. 793,499.—F. Bain of Lagrange, Illinois.

A plunger lubricator operated by a worm and gear in the usual manner. The gear actuates an eccentric *24*, which imparts a rocking motion to the bell crank *20*, *22*, through the short arm of which the motion is imparted to the plunger *8*. By means of the set screw in the upper of the two arms *18* the stroke of the plunger may be adjusted. The upward movement of the



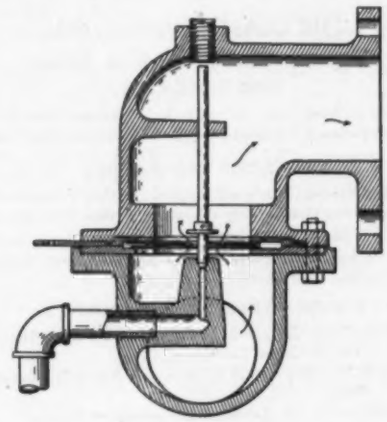
BAIN MECHANICAL LUBRICATOR.

plunger produces a vacuum in the barrel *7*, until the plunger reaches the top limit of its stroke, as shown in the drawing, when oil can enter freely. The loose tube *37* in the filler opening is used for determining the current of oil in the reservoir. By closing the orifice *36* with the finger the tube and plug may be lifted out and the depth of oil seen.

Induced Draught Device.

No. 793,437.—F. E. Grout of Orange, Massachusetts.

This is an improvement applied to the Grout steam car, which has a wind scoop on top of the bonnet to produce a current of air which shall carry the products of combustion downward from the top of the boiler inside the bonnet. Another wind scoop, at the base of the down draught flue thus formed, assists the mixed currents to draw backward under the footboard. This arrangement, of course, is operative only when the vehicle is in motion, and when it is stationary a steam jet is necessary to induce a downward draught in the flow. The invention covers a connection



ASH CARBURETER.

between the throttle control device and the valve admitting steam to the steam jet, so that a separate operation is not required to open said valve when the vehicle is brought to rest by closing the throttle.

Carbureter.

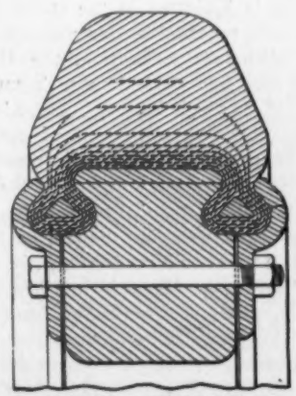
No. 793,498.—J. L. Ash of Lansing, Michigan.

This is a modification of the well-known Oldsmobile carbureter, the modification consisting in the fact that, instead of the sliding shutter formerly employed to restrict the air passage around the needle valve, an iris diaphragm is employed, which gives an approximately uniform air passage all around the needle valve.

Solid Tire.

No. 793,508.—A. T. Collier of St. Albans, England.

A solid tire designed to be held to the rim in such a way that there shall be



COLLIER'S SOLID TIRE.

practically no useless rubber at its base. The form of the tire is clearly indicated in the drawing.

THE AUTOMOBILE

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France Drops Gordon Bennett Race. France has finally and officially decided that she will not again take part in the Gordon Bennett race. Our Paris correspondent's detailed report of the action of the French club shows that a majority of the constructors voted in favor of letting the race next year go by default. Not that the French have any idea of abandoning road racing, which has placed the automobile where it is to-day. Indeed, no other national group of manufacturers has a keener appreciation of the value of road racing, as is indicated in the statement of M. Michelin, reported by our correspondent. In M. Michelin's estimation, the Gordon Bennett race has worked more harm than good to the French industry, as under the rules the complete equipment of each car has to be manufactured in the country it represents. Thus not only have the constructors (other than French) benefited from the competition, but the foreign manufacturer of accessories and fittings, in which at one time the French had almost a monopoly. This is a novel and interesting view of the race and its effects.

The decision of France to drop the race, while open to severe criticism from a sportsman's point of view, is commercially unassailable. By its action, the French trade has discarded as useless the fiction that the race is purely a sporting event. If it ever had that character, it has long since lost it, in any amateur sense, and has become a purely professional affair so far as France and all other European participants are concerned—in fact, a contest of engineering skill of high technical importance. America alone appears in the contest on an amateur basis, as the entries of Dr. THOMAS, of Chicago, and Mr. C. T. MUIR, of Lexington, Ky., were not influenced by commercial reasons.

Reduced, therefore, to a commercial basis, as the race is, the argument of the French constructors that their representation in the race is disproportionate to the technical importance and commercial magnitude of the French industry is reasonable and difficult to refute.

The Gordon Bennett race, or any race, is necessarily a sufficiently empirical test to make the laws of chance a factor in the determination of the winner. Only in a laboratory test is chance a negligible quantity, and laboratory tests are not spectacular and do not set the automobilists of two continents on edge awaiting the results of a great road race.

✷

Interstate Touring and Registration. A feature of our state automobile laws — the new ones of this year as well as the older ones—about which there has been little or no comment is that pertaining to interstate touring. As automobiling grows, touring increases, and in the interest of both the pastime and the industry as well as of the development of the country in which most touring is likely to be done, it is of importance that such touring be encouraged in every reasonable way.

Doubtless such encouragement was intended by the legislators when they incorporated in the various laws clauses exempting from registration any non-resident who has registered under the law of the state, territory or federal district in which he resides. And such reciprocal relations surely do facilitate interstate touring among the states having such laws. However, an anomalous condition has arisen. Heretofore most owners of cars felt themselves fortunate to live in a state that had not passed a registration law, but now this has become a doubtful benefit. A study of the various laws reveals the fact that a resident of a state having no registration law may not drive his car in other states possessing such laws without taking out a license in almost every state he enters. It will not suffice for him to purchase a certificate and number in some licensing state and expect to get through all the others with such license and tag, for the laws of a number of states specifically require that he shall be registered in the state in which he lives. Exceptions to this are Connecticut, Rhode Island, New Hampshire, Vermont and Maine.

None of the state laws exempts an owner who is registered under a city ordinance only. Therefore, if the Chicago, or Cleveland, or Cincinnati owner, who has complied with registration ordinances in his own city, attempts to traverse Indiana, or Michigan, or Wisconsin, he is likely to get into trouble with the police department of some city, or more likely with some officious country constable.

Presumably it was the good intention of the legislators to frame laws that would not require the automobilist to go to the trouble and expense of registering in each state provided he were registered anywhere else and carried a number tag so that his identity could be established readily should he cause an accident and then act the dastard by hurrying away from the scene. But if such were the intention, it was not well executed, and now any automobile owner who cares for extensive touring has an advantage if he lives in a state having a registration law.

✷

Special Design for Special Use. The ambition to make one tool do the work of half a dozen different ones, to combine in one piece of apparatus the functions of several, is a prominent trait in the make-up of the average American engaged in mechanical work, especially if he be a designer rather than a user. The American is by no means alone in this respect; but Yankee ingenuity seems to find abundant exercise in working out such combinations. Sometimes this is a good thing, and sometimes it is not; sometimes combinations have much to recommend them, and sometimes they are weakened by their own complexity. It is but natural that the automobile should be included in the list of machines that might be used for more than a single purpose, and the result has been the production of automobiles that could, according to the manufacturers, be used for delivery wagons all day and then have the delivery bodies removed, passenger bodies substituted and used for pleasure purposes in the evening and on holidays.

Fortunately manufacturers are laying far less stress on this point than they did a little earlier in the development of the automobile. Experience has taught that however well a machine may stand up as a pleasure car, it will not give satisfaction as a commercial vehicle unless constructed in an exceptionally substantial manner—heavier than is necessary for pleasure car work. The reason is not at all obscure. A car used for pleasure only may get a certain amount of hard usage; is certain to be driven over a good many miles of rough road; and will undoubtedly get a few hard knocks. This much any good car will stand without trouble, for it is anticipated by the designer and builder. But the very fact that the car is built and bought for pleasure purposes ensures its being driven over the best roads that can be selected, for there is certainly no pleasure in bumping along over a boulder-strewn trail when smooth macadam is available; and the driver will not, as a rule, keep his car on

the road when he himself has been with the machine so long that driving it has ceased to be a pleasure, for the time. The personal comfort of the occupants of the car depends very largely upon the way the car is driven. All this has a strong influence in protecting the car from rough handling, which would be destructive alike to the pleasure of the passengers and to the mechanism of the car.

When the car is used for actual work, however, these things are immediately lost sight of. The automobile is expected to do its work rapidly, and to do a great deal of it at a time. Therefore the car is loaded heavily and driven rapidly over the shortest routes. If the shortest road is a smooth road, all well and good; but if it is a bad road, it must be traversed, without regard to the comfort of the driver, if time is to be saved thereby. Work does not cease when the driver gets tired, but when the day's work is done, be it long or short. On a stormy day the driver cannot stay indoors and leave the car under cover, but must go out and cover his ground as thoroughly as if the sun was shining. The minute care usually accorded to a pleasure car is unknown to the working machine, which is shoved through the work and tinkered up, if necessary, after it gets back to the garage, and if it cannot be brought home under its own power, the automobile as an economic factor gets a black eye.

These are facts that are receiving more attention than formerly; but still not as much, perhaps, as they deserve. A racing sulky, though strong and substantial from the point of view of a racing man, is a flimsy thing in the eyes of a teamster; while the lightest dray ever built would present a ridiculous appearance on a race track. So an automobile, built for pleasure purposes, should not be expected to carry the burdens of a commercial wagon, any more than a beer truck would be used for pleasure touring.

It will be understood that these remarks apply to automobiles used for carrying heavy burdens, delivering merchandise and such service, commonly called commercial work. For business purposes where the load is a live one, however, such as carrying about the doctor, the traveling salesman, the agent and others whose work is facilitated by cutting down the time occupied in getting from place to place, the touring car and even the runabout are of the utmost use; for they are built for such work. The fact that many business men are using the automobile daily, and thoroughly believe in its utility and practical advantages, points out one of the important fields of usefulness which is rapidly opening up.

When a large gear wheel meshes with a small one the latter is called the "pinion." A "cog"-wheel, properly speaking, has separately inserted teeth, while in a gear the teeth are cut from a solid piece of metal.

The word "spindle" is used to designate a slender and comparatively long shaft.

OLDS DETROIT PLANT TO GO TO LANSING.

Several Buildings Already Completed and Others Planned—Will Provide Larger Capacity Than Present Plants Combined—Superior Shipping Facilities—No Delay in Filling Present Orders.

Special Correspondence.

LANSING, MICH., July 10.—Coincident with the completion of the "Belt" railway comes the announcement of the next step in the plans of the Olds Motor Works—that of removing the Detroit factory to Lansing. To this end the company has, for the last eighteen months, been constructing new buildings and remodeling old ones to care for the machines and men coming from Detroit.

In the development of the plans for concentrating all the manufacturing of the company at Lansing, the need of shipping facilities equal to those of Detroit had to be met, and the Lansing Manufacturers' Railroad, which connects with all important trunk lines in Michigan, was constructed by the Olds Motor Works, the Olds Gasoline Engine Works and the American Suction Gas Producer Company.

Of the new buildings involved in this move, the new forge shop and pattern storage buildings are completed, and work is well under way on the new foundry building of brick and steel construction. This foundry will have a daily capacity of forty tons of finished castings.

In addition, plans are completed for three more buildings, which ultimately will give a total capacity greater than the combined capacity of the Detroit and Lansing plants at present.

During the past winter and spring manufacturing has been vigorously pushed at both plants, and, as a result, there will be no serious delays, if any, in the delivery of machines. Removal of the Detroit plant to Lansing will be begun at once, but it will be several months before the work is completed. The erection of the three new buildings referred to probably will not be begun until next spring. When they are completed the present force at Lansing will be doubled. There are now about 700 employees of the company here.

BUILDING AMERICAN MORS.

St. Louis Car Co. Working on First Lot of Fifty Machines.

Special Correspondence.

ST. LOUIS, July 10.—The St. Louis Car Co., of this city, whose determination to take up the manufacture of the Mors car in America, as has already been announced, has completed its arrangements for the reproduction of the well-known French machine and has the preliminary work well under way. By the terms of the agreement the American concern is to be furnished with all information, blue-prints, patterns, specifications, and so on, necessary for the production of machines which shall be exact counterparts of the foreign-built cars. Some of the parts, including the cylinders, will be imported in the rough. The workmen in the factory of the St. Louis Car Co. are actually using parts of the French-built cars as models from which to work, in addition to the drawings. The metric system is used throughout the automobile plant.

Cars of 24, 40 and 60-horsepower will be turned out, and the first lot will consist of fifty machines. In addition to the Mors cars, the factory will manufacture a light machine for use either as a runabout or a light delivery rig. This machine is being built from designs made by Theo. P. Meinhard, assistant superintendent of the St. Louis Car Co., who is in direct charge of the automobile work. The light car is to have a two-cylinder, vertical air-cooled motor mounted in front, driving through a belt transmission; the price is to be unusually low.

The St. Louis Car Co. is installing all kinds of labor-saving machinery, with the idea of bringing the cost of production to the lowest possible figure. At present a great deal of work is being done on jigs, templates, gauges and other apparatus necessary for rapid and accurate manufacturing on a large scale.

The concern referred in the foregoing should not be confused with the old established automobile concern, the St. Louis Motor Carriage Co. The newcomer in the automobile field has been long identified with the construction of trolley cars and railway coaches, for which it has an extensive plant.

COLUMBUS TWO-DAY MEET.

Rain Prevents Record Breaking Time—Oldfield Sued for Divorce.

Special Correspondence.

COLUMBUS, O., July 5.—Mishaps to the machines in the big 24-hour race in the tournament of the Columbus Automobile Club, held July 3 and 4, probably prevented the breaking of the record for this time. The winner was a Pope-Toledo, owned by C. Edward Born, of this city.

Just before the finish, when it was apparent that Born would take first place, Louis Ph. Hoster and Oscar Lear, of this city, other participants, filed a protest against Born, alleging that the car he used was not his own, but that it was one specially built for racing by the Pope Company, and had been substituted for the machine he had sent to the factory for repairs. The protest was not allowed, and Born was officially declared the winner. The final result of the race showed that Born's car, driven by George and Charles Soules, covered 828 1-2 miles, which would have been more but for the fact that the car burst a tire and had to stop for repairs.

Earl Kiser won the final heat of the Columbus Motor Derby, five miles, from Barney Oldfield. Oldfield, in this race, made the fastest mile of the meeting—54 2-5 seconds, two seconds below the former track record.

Both Kiser and Oldfield ran five-mile exhibitions, Oldfield having the best of the argument, covering the distance in 4:40 2-5. Kiser's time was 4:48 4-5. These runs were made over a track wet from a downpour of rain.

In the three-mile open, Lee Frayer had a walkover, his time being 4:01 2-5. Herman Hoster, Franklin, won the five-mile handicap in 7:55 2-5. C. Edward Born's Franklin took the two-mile handicap of the Columbus Automobile Club in 2:52, and the five-mile motorcycle race was won by George T. Stream, Indian, in 7:08 2-5.

Just before he entered in the 24-hour endurance race, Barney Oldfield was served with notice by a deputy sheriff that his wife had brought action for divorce against him in the courts of Franklin county, of which Columbus is the county site, charging him with serious offenses.

The big meeting was a success, and it is probable that similar events will be held annually by the local club.

OPPOSED OVER ACCIDENT.

Prosecution and Defense Funds Raised by Owners and Chauffeurs.

Special Correspondence.

PHILADELPHIA, July 8.—In a case soon to come to trial in the Court of Oyer and Terminer, in this city, will be witnessed the somewhat unusual spectacle of the automobile owners of the city arrayed against their employees, the chauffeurs.

Monday night, June 26, an automobile dashed at high speed into a crowd crossing Broad street, and killed a little boy. Bystanders claimed to have heard the chauffeur say an instant before the fatality: "Watch me shake him up," or something to that effect. Bicycle policemen at once gave chase, but were unable to catch the car, as the operator increased his speed.

For three days the city detectives and the entire police force were unsuccessful in ferreting out the miscreant, and it was not until a telephone message to the Automobile Club of Philadelphia furnished the right clue that the man was apprehended. The club had offered a reward. President Starr promptly put the information in the hands of the police, who did the rest.

The culprit turned out to be William Meyers, employed by J. K. Mitchell, 3rd. He had had the car out without permission, and, with a party of women friends, had visited several drinking resorts. Magistrate Eisenbrown, after hearing the evidence, held Meyers without bail to await the coroner's verdict. The women were temporarily released.

The local branch of the Chauffeurs' National Organization has raised $500 to defend Meyers, while the A. C. of Philadelphia will do its best to secure his conviction as an object lesson to chauffeurs who use their employers' cars without permission.

One peculiar phase of the affair was that Mr. Mitchell, the owner of the car, had offered a reward of $250 for the arrest of the guilty person before he was aware that it was his own car that had run down the victim. This amount he turned over to the club, which paid it out, along with its own reward, to the proper parties.

GOOD CITIZENS ARRESTED.

Grand Rapids Auto Owners Fighting Local Speed Limiting Law.

Special Correspondence.

GRAND RAPIDS, July 10.—Automobilists in this city are making a fight against what they term "an unjust ordinance." More good citizens' names have appeared on police court records during the last month than ever before, and the auto drivers are getting tired of it. Dr. Perry Schurtz is making a test case. He was found guilty of exceeding the speed limit, which is nine miles an hour. He immediately appealed his case to the superior court and is now awaiting trial. He has the backing of a large number of automobile owners who are determined to test the legality of the ordinance. Dr. Schurtz is president of the Grand Rapids Automobile Club.

Besides the city ordinance, which fixes the speed at nine miles an hour, autoists have to contend with the state law which fixes it at eight. The city law, as well as that of the state, requires registration of cars. A number of local owners have already registered with the secretary of state, and it is understood that, from now on, many will ignore the city registration law. Evidently it has been overlooked that the state law specifically provides that local authorities cannot maintain ordinances requiring any further registration than that with the secretary of state nor any law contrary to the state law.—Ed.]

The boulevard between this city and Grandville, a distance of seven miles, is completed to within a short distance of the city limits, and it is expected that it will soon be in shape for use by automobilists.

Preparations are now under way for a speedway, and the matter may be taken before the council. There are a number of places in the city where there would be no danger in high speed, and the city fathers will no doubt be asked to set one of these apart for the use of the automobile owners.

HIGH TAX RATE IN ARGENTINE.

Special Correspondence.

KANSAS CITY, July 6.—Argentine, a suburb of Kansas City, has no automobiles, and proposes to put up the barrier before one of its citizens yields to the charms of the motor car. Hugh Smith, city attorney of the village, presented to the city council at its last meeting an ordinance for taxing automobiles. He said he did not know at what figure to estimate the tax. Mayor Jasper asked the council for suggestions, but all of the members were "stumped."

"Those things won't do the horseshoin' business any good, nor the feed business, either," said a councilman, who is a blacksmith, to the mayor, who owns a feed store. "I move you fix the tax on 'em at $10 for every six months."

The ordinance was passed in this form. Grocers, druggists, hotel keepers, undertakers, lawyers and doctors have to pay only $5 license every six months.

KANSAS CITY INJUNCTION HEARING.

Special Correspondence.

KANSAS CITY, July 7.—The hearing on the application for a restraining order filed in the Circuit Court by the Automobile Club of Kansas City, forbidding the chief of police, the city attorney and the city license inspector from enforcing the ordinances relating to automobiles, was continued by Judge Brumback on July 1, and will come up for a hearing on July 8.

The city attorney notified the court that F. M. Hayward had been assigned to the case by the city as special counsel, and that he had not had time to prepare his side. Hayward is an associate city counselor.

It was agreed that the stipulation now in force, under which no arrests are to be made until the court passes on the injunction case, is to continue effective.

HELD COURT IN AN AUTO.

Special Correspondence.

BOSTON, July 8.—In an effort to clear up some disputed points in an automobile speeding case, Judge Berry, of Lynn, last week took an automobile ride over the course where the defendants were accused of driving at illegal speed. The automobile that was used was the one in which the alleged offense was committed, and in it, besides the judge, was the police officer prosecuting the case, the defendants and counsel for both parties. After riding over the course, the judge held court in the rear seat of the car, while the counsel argued the case.

The Watt is the unit of electric power; 746 watts equal one horsepower.

The insulation of a porcelain plug is easily broken or cracked, and the plug should never be left rolling around loose in the tool box.

VETOING OF ILLINOIS BILL.

Brought About by Combined Efforts of Good Roads Advocates and Farmers.

Special Correspondence.

SPRINGFIELD, Ill., July 8.—Behind the vetoing by Gov. Charles S. Deneen of the automobile bill passed at the recent session of the Illinois legislature, is a story which it is said discloses how the measure, which was of such vital importance to automobilists over the state, came to be defeated.

The good roads people, who were unable to get the sort of bill passed by the general assembly that they desired, are credited with securing the defeat of the automobile bill. The story of the circumstances attending the fate of the bill, while known to every one directly interested, has not been known by the general public.

Gov. Deneen fostered the passage of a good roads bill, and it was the general opinion over the state that no opposition would be encountered in having a proper bill passed. Unexpectedly a general uprising among farmers developed, and these farmers made a fight against the good roads bill, claiming that the bill would be of benefit only to automobilists of Illinois. They passed resolutions and instructed their representatives in the legislature to fight the measure.

This resulted in a "falling out" between the good roads people and the automobilists, and after the automobile bill had been passed a protest came from the president of the Illinois Good Roads Commission. To the automobilists this cry plainly forecasted the action that would be taken by the governor, because it was known he was anxious that the good roads people should be favored by the right kind of a measure.

In vetoing the bill the governor made the following report:

"This bill is an act designated to regulate the use of automobiles and other motor vehicles and regulating the rate of speed thereof, and also exempting from regulation the rate of speed of such vehicles by municipal ordinances. Said bill also provides certain privileges in the matter of giving cash bonds by those violating the provisions of said act, and also provides for racing on public highways with automobiles, under certain regulations.

"No reason is perceived for a special act regulating motor vehicles and exempting them from the operation of the general laws and the legislative power of cities and villages which apply to vehicles of other classes. The provisions of this bill are such as to bring it almost, if not entirely, within the condemnation of the provisions of the Constitution forbidding special or class legislation.

"For these reasons, I am constrained to return this bill without my approval."

BALTIMORE RACES JULY 4.

Large Crowds Witness Fair Sport at Electric Park.

Special Correspondence.

BALTIMORE, July 7.—The series of automobile, motorcycle and bicycle races at Electric Park July 4, under the management of Howard A. French, furnished fairly good sport, and were witnessed by a large number of persons.

The most interesting event of the afternoon was a motorcycle pursuit race. Owing to the large number of entrants, this was run off in three two-mile heats and a ten-mile final. Charles Callahan, on a 4-h.p. Astor, won the final heat, with "Chic" Thomas, 1 3-4-h.p. Indian, second. The race

was closely contested, and Callahan's time for the ten miles was 15:04.

The two-mile novice automobile race was won by A. F. Wagner, driving E. Walsh's four-cylinder Premier, in 3:00 3-5. Bob French, driving a Rambler, looked good in try-outs, but was practically left at the start.

A two-mile automobile selling handicap was a novelty here. The handicaps were arranged according to the prices of the machines, a second being allowed for each $100 less in value. There were three entrants for the event: Edward Walsh's Premier, Stanley Zell's Stevens-Duryea, and Robert Atkinson's Pope-Toledo. Walsh was allowed 18 seconds on a valuation of $1,200, Zell was given 8 seconds on $2,500 and Atkinson was scratch with $3,200. The Premier kept the lead for fully three-quarters of the distance, when Zell passed him, winning in 3:35. Atkinson was out of the race, owing to an accident at the post.

TOURING THE MIDDLE WEST.

Milwaukee Alderman Completes Long Trip and Reports Varied Experiences.

Special Correspondence.

MILWAUKEE, July 7.—Alderman Sherburn M. Becker recently completed an automobile trip of 1,036 miles, which he covered at the rate of 16 miles an hour. Mr. Becker is the first Milwaukeean to make a tour of this kind, and in so doing he met with many experiences of a varied nature.

One of the most unpleasant features of the trip was encountered in Indiana, when the machine became stalled in the mud for four hours, and it was only after the greatest difficulty that it was released and the journey continued. Mr. Becker had not gone far, however, before an electric storm overtook him, and he was forced to seek shelter under a tree. He and his chauffeur, believing that a car with brass trimmings might not be the safest place during a storm, got out and walked back along the road, but had not gone more than fifty feet when the tree was struck by lightning. Neither he nor his driver were injured, but both felt the shock.

"The scenery in Indiana is superb," said Mr. Becker. "There are hills galore, and the roads, as a rule, are in very good condition. Most of them are made of crushed stone, and are as smooth as asphalt. The farmers of the state, however, do not take kindly to the automobile. They have built culverts in such a way as is calculated to break not only the heart of the automobilist, but also the machine. They have speed laws down there which are not nearly so favorable as they are in Wisconsin. In most of the cities the limit is from eight to ten miles, but I was fortunate enough to avoid trouble. I was careful when I met a team, and especially when it was of the mule variety. The Hoosiers are abnormally curious, and the whole town turns out when a machine makes its appearance."

"SEEING CLEVELAND."

'Bus Line Inaugurated by Local Dealers—Nominal Fares Charged.

Special Correspondence.

CLEVELAND, July 7.—Chisholm & Phillips, dealers of this city, have commenced the operation of an automobile 'bus line, known as "Seeing Cleveland." Cleveland has a fine park and boulevard system, but the arrangement of the city and the street car lines are such that it is almost impossible to see the entire range of the system unless one can afford an automobile or a carriage. Consequently there are thousands of residents and many transients who are elated at the opportunity of a drive throughout the city at a moderate price.

The company operates the cars at intervals of two hours, making a two-hour trip of twenty miles, and charges 50 cents a head. Thus far the venture has proved most successful. The cars are made of the chassis of a Knox touring car, strengthened and lengthened, and fitted with a truck type of body, with removable upholstered seats. In off seasons, when they cannot be used in the touring service, the seats may be removed and the cars used as trucks.

A guide accompanies each car, calling attention to the objects of interest, and stops are made at several points, as is the custom with sight-seeing 'bus lines in the larger cities of the country.

NEW MILWAUKEE GARAGE.

Special Correspondence.

MILWAUKEE, July 7.—One of the most commodious and up-to-date automobile establishments in the city is the new garage of the Electric Vehicle & Supply Co., corner Third and Wells streets. The building is of brick—two stories and basement—

INTERIOR OF ELECTRIC VEHICLE AND SUPPLY CO.'S GARAGE IN MILWAUKEE.

50 by 150 feet, and well lighted. The first floor is used for offices, salesroom and charging department; the second for storage purposes, and the basement is equipped as a modern repair shop.

The company handles the Columbia gasoline and electric cars, Studebaker gasoline and electrics, Baker, Buffalo and Royal electrics, Pierce Great Arrows and Locomobile gasoline machines. F. G. Curtis is president of the company; J. G. Zimmerman, secretary-treasurer, and W. L. Hibbard, sales manager.

CALIFORNIA REGISTRATION.

Special Correspondence.

SAN FRANCISCO, July 5.—The records of the Secretary of State's office show that 2,475 automobiles were registered under the new law up to June 1. It is estimated that there are about 1,700 cars yet to be registered. Badges have been issued in addition to 1,418 chauffeurs. The list issued by the Secretary of State shows that there are about a third more cars owned in the southern portion of the state than in the section about San Francisco.

ANOTHER COAST RECORD.

Jacobs in Two-Cylinder Car Reduces Los Angeles-'Frisco Time to 31:35.

Special Correspondence.

SAN FRANCISCO, July 12.—Fred A. Jacobs, in a Rambler, two-cylinder, 18-horsepower car, accompanied by Ed Matthews, Will Faegol and Emil Bollinger, completed a run from Los Angeles at 11.35 this morning, covering the entire distance of 503 miles over five mountain passes in 31 hours and 35 minutes. This breaks the record made by Whitman and Hamlin in a Franklin runabout two weeks ago by 6 hours and 18 minutes.

Jacobs started out a week ago to beat the Whitman record by a run from San Francisco to Los Angeles, carrying a letter from the San Francisco *Chronicle* to the Los Angeles *Times*.. Owing mainly to the fact that the party was lost for some hours on the way, the letter was delivered in 39 hours and 5 minutes, 1 hour and 12 minutes behind the Whitman record of 37 hours and 53 minutes. Jacobs then had a try at the record on his return trip, bringing a letter from the *Times* to the *Chronicle*, with the result as stated.

The party started at 4 o'clock Friday morning and delivered the letter at 11:35 to-day. On account of the experience on the down trip it was decided to take local guides, as far as possible. Three guides were used on the way, Homer Thalmann piloting the party from Los Angeles to Santa Barbara, W. P. Henderson from Santa Barbara to Paso Robles, and Bollinger from Paso Robles to San Francisco. On this account no time was lost in hunting roads. Jacobs reports that he had only one puncture, and had to make no other repairs on the trip. He planned a thirty-six-hour schedule and was ahead of it throughout the run. The time made between the two cities is of interest in view of the increasing popularity of the run.

As a result of this trip, and to encourage others to make the trial, Mr. Jacobs has offered a trophy valued at $100, to be known as the "*Chronicle* trophy," to the owner or dealer who will equal his record by delivering a letter from the *Times* at Los Angeles to the *Chronicle* at San Francisco, or vice versa, within 31 hours and 35 minutes. The offer is open to steam or gasoline cars, cost not exceeding $2,650, carrying four passengers.

Whitman stated when the announcement of the attempt to break his record was made, that if Jacobs proved successful he would make another trial.

McHENRY COUNTY CLUB RUN.

Threatening Weather and Indifferent Roads Prevent Full Attendance.

Special Correspondence.

MILWAUKEE, July 7.—On Saturday last seven cars, representing the McHenry County Automobile Club, arrived in Milwaukee, and made the return trip on Sunday. Threatening weather and bad roads accounted for the small number of participants. The cars left Woodstock, Ill., at 12.30 P.M., and four of them reached this city at 7.45, after having stopped nearly two hours at Lake Geneva, Wis.

A number of members of the Milwaukee Automobile Club had intended to meet the McHenry autoists at some point about half way between the two cities, but owing to a misunderstanding as to whether the run would be made in case the weather was threatening, the Illinois drivers were compelled to make the trip alone.

The party from Woodstock included the following: Mr. and Mrs. Olson, Mr. and Mrs. John Withworth and son, Walter, Miss H. E. Young, Mr. and Mrs. C. P. Barnes, Mr. and Mrs. H. J. Daggett, Miss Elizabeth Hurst, Mr. and Mrs. J. H. Gardner, J. W. Chewning, Mr. and Mrs. J. D. Donavan, Mr. and Mrs. Fred Schutt, Mr. and Mrs. Peter Rose, Mr. and Mrs. A. J. P. Bertshy, and Edward Drible.

While Woodstock is a small town, having a population of only about 5,000 persons, there is much interest shown in automobiling. Twenty-seven machines are owned there, and most of the owners are members of the club. Another and larger run will be held in about thirty days.

MONMOUTH CLUB IN NEW HOME.

Special Correspondence.

ASBURY PARK, N. J., July 7.—The members of the Monmouth Automobile Club have accepted the offer of former State Senator James A. Bradley to give them the use of a building on the corner of Main street and Sewall avenue, rent free, and are now comfortably housed there.

The first floor contains the principal room in the building. This room has been furnished with reading tables, chairs and the like, and provided with current automobile literature. The clubhouse will be kept open every day.

WORCESTER CLUB MEETING.

Largely Attended—Interesting Address by Legislative Representative.

Special Correspondence.

WORCESTER, MASS., July 8.—The thrice postponed July meeting of the automobile club was held at the Bay State House on Friday evening, and it was generally conceded to have been the most instructive ever held by the club.

The feature of the meeting was an address by Francis Hurtubis, Jr., of Boston, legal adviser and legislative representative of the Massachusetts State Automobile Association, on "The Legal Status of the Motorist in New England."

The members of the club can no longer complain of lack of information regarding the workings of the new state law which became effective June 3, as Mr. Hurtubis clearly defined its provisions. He also suggested that the club especially warn its members to consider the rights of others, and to exercise the greatest care when driving around sharp curves and corners.

The following applications for membership were favorably acted upon: George A. Coburn, A. L. Pratt, Eben S. Stevens, C. R. Macomber and Thomas Callahan.

DENVER HILL-CLIMB.

Many Spectators Witness Contest of Local Club Near Jesuit College.

Special Correspondence.

DENVER, July 5.—Attended by more than 500 persons, in an array of seventy-five machines, the Denver Automobile Club's hill-climbing contest was held Sunday afternoon, July 2, on the three-quarter-mile hill near the Jesuit College, north of the city. With the exception of a few slight mishaps, the day passed pleasantly, and times made were far better than the expectations of the local enthusiasts.

FRANK BOTTRILL IN PIERCE GREAT ARROW, WINNER OF FREE-FOR-ALL IN DENVER HILL-CLIMB.

The best event of the day was the free-for-all class for roadsters, in which there were three entries. The 40-horsepower Pierce Great Arrow, owned by Bottrill Brothers, won by climbing the hill in 1:06 1-2. The 25-horsepower Stephens-Duryea, owned by the Felker Auto Company, made second best time, 1:06 3-4.

The one bad feature of the meet was the breakdown of George Harrington's 6-horsepower Stanley. The Stanley car made a good start, and it looked as if it would make better time than one minute. But when half way up the long hill the gasoline pressure pump gave trouble. Not to be outdone, however, Mr. Harrington pumped oil by hand, and made the climb in 1:12.

The summary of the other trials follow:

Sixteen-horsepower cars, with full loads.—Merriam, A. T. Wilson, 1st; time, 1:34. Reo, Mathewson Company, 2d; time, 1:36. Queen, Mathewson, 3d.

Twelve-horsepower cars, with two passengers.—Franklin, Felker Company, won in 2:00.

Twenty-five-horsepower cars.—Stoddard-Dayton, C. M. Wood, Colorado Springs, won in 1:50; other entries did not finish.

After the endurance test, several impromptu races were run by onlookers, who had taken their machine to the scene. None of these were timed, however.

ORPHANS' DAY IN CLEVELAND.

Local Club Preparing to Entertain Little Dependants July 19.

Special Correspondence.

CLEVELAND, July 6.—Thousands of poor children in Cleveland, who are inmates of the orphan asylums and similar institutions, will be given a big outing July 19 by members of the Cleveland Automobile Club.

Secretary C. A. Marvin, of the club, is in charge of the arrangements. He will arrange to have a sufficient number of automobiles at each institution on that morning to handle all that want to go, and as there are a number of such institutions with occupants running into the thousands, he will have a large proposition on hand securing a sufficient number of cars. The party will be taken through the park and boulevard system, and at Edgewater Park the little ones will be treated to a luncheon by the members of the club. Those who have interested themselves in the outing are looking forward to it with almost as much pleasure as the children themselves.

GOT HIS PAPERS MIXED.

Special Correspondence.

KANSAS CITY, MO., July 6.—W. C. Evans, a traveling man, who was arrested a few days ago because his automobile had no number plate, was released after a hearing in the Central Police Court. The city attorney who was trying him accused him of selling impure milk, having gotten his papers mixed.

"I might have been guilty of selling impure automobiles before I began to handle my present line," said Mr. Evans, "but impure milk—never!"

The witticism and lack of evidence procured his release.

INFORMATION FOR BUYERS.

CYLINDER CASTINGS.—There is perhaps no branch of foundry work that calls for more skill and accurate work than the casting of cylinders for gasoline engines, and the rapid increase in the number of engines manufactured has made it difficult to find founders able to turn out first-class work of this kind. Those shops in which gas engine cylinders can be successfully cast have, as a rule, made this work a specialty, as has been done by William R. Hart, iron founder, of 11 Allen St., Lawrence, Mass., who is prepared to furnish good castings for one, two, three, five and eight horsepower engines from his own patterns, and cylinders of any size from patterns furnished by customers. The great difficulty in casting these cylinders lies in the fact that the coring is delicate and complex, and there is little opportunity for free venting, rendering it very easy for blowholes to form. A little corner from the sand mold, or a scrap off a core, will make a sand-hole, which may not be discovered until the cylinder is machined and tested under pressure. A special mixture of irons is necessary for this class of castings, and even with all the precautions that are taken defects are not infrequently discovered by the foundryman, who is forced to discard the casting.

MONARCH METAL POLISH.—The automobilist who likes to have his machine looking its best appreciates a polish that will keep the brasswork bright without scratching it and without discoloring it with chemicals. A polish declared to have these qualities is made by Armstrong & Co., of Kalamazoo, Mich., a concern that manufactures metal polishes in both liquid and paste form. The manufacturers state that no acids are used in these polishes, which are strictly oil polishes, and therefore have no injurious effect on metals, no matter how finely finished. The powder in the liquid polishes is guaranteed to remain in suspension and not to settle to the bottom and become caked. The paste polishes are made in three colors—white, red and black—for different classes of work. The white is for household and general use, the red for work that is exposed to high temperatures, and the black for such work as harness mountings, as it does not stain the leather.

FRICTION DRIVE CAR.—A new car, to which the friction transmission system has been applied, is described and illustrated in a catalogue issued by the Buckeye Mfg. Co. of Anderson, Ind., manufacturers of the Lambert car. The catalogue describes a four-cylinder, 28-32-horsepower side entrance touring car; a side entrance touring car with horizontal double opposed cylinder motor of 16-horsepower, with detachable tonneau; and a runabout with 12-horsepower, double opposed cylinder, horizontal motor. The feature is, of course, the friction drive; this is the same system as used in the Union cars, the Union Automobile Co. manufacturing under the patents of the Lambert concern. The Lambert catalogue is well illustrated and shows clearly the arrangement of the various parts.

TELESCOPIC TIRE PUMP.—The numerous and obvious disadvantages of the ordinary type of foot-pump for inflating automobile tires have appealed so strongly to those who have to use them, that many pumps,

SKINNER COMPOUND TIRE PUMP.

of improved and more efficient design, are being brought out to meet the requirements of the automobilist. One of these is the Skinner compound pump, illustrated herewith, which is manufactured by Skinner & Skinner, of 4133 Indiana Ave., Chicago. This pump consists of two telescoping cylinders, the outer one 1 1-2 inches in diameter and the inner one 7-8 of an inch in diameter. On the down stroke the air in the large cylinder is compressed into the small one, while at the same time the air in the small cylinder is forced into the tire, all the work being done on the down stroke, when the greatest power can be applied. The small piston is stationary. It is stated that a man can readily pump up a pressure of 200 pounds to the square inch. The pump is of polished brass, with detachable wood handle.

TRADE LITERATURE.

Hyatt Roller Bearing Co., Harrison, N. J. Bulletin No. 23, containing a number of commendatory letters from users of Hyatt roller bearings.

Cullman Wheel Co., 1024 Dunning street, Chicago. Catalogue of sprockets of all sizes to fit standard chains; spur differential gears for vehicles of various weights; and chains, including the Diamond, Baldwin and Whitney chains.

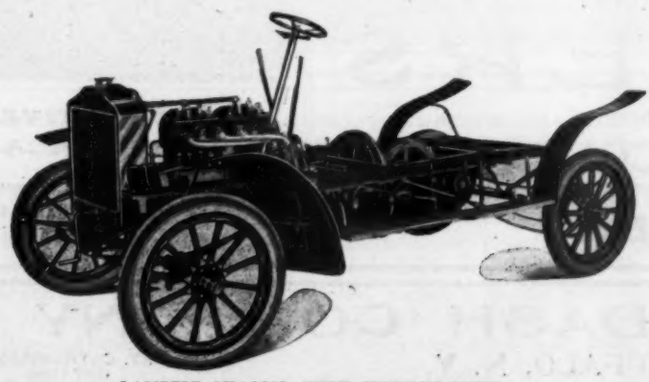
Diamond Rubber Co., Akron, O. Booklet entitled "Seven Years," giving an account of the growth of the business of the Diamond Rubber Co. and a short resumé of its products. This company states that it manufactured the first pneumatic automobile tires made in America.

Charles E. Miller, 99 Reade street, New York. Card describing the "Handy Truck," a sort of roller skate to put under an automobile wheel. With a pair of these trucks under the front wheels the car may be turned as on a turntable. Made of steel and weighing 23 pounds each.

Motor Supply Co., 1427 Michigan ave., Chicago. Leaflet illustrating and describing the U. S. Auto Jack No. 1; this is a screw jack with double-threaded, one-inch steel screw, operated by a lever. Suitable for a car of any weight up to 6,000 pounds. Height 10¾ inches, weight 5½ pounds.

National Battery Co., Buffalo. Pamphlet describing the Central Exchange of the Frontier Telephone Co., Buffalo, the electrical power for which is supplied by National storage batteries. The National Battery Co. has the agency for the Studebaker electric automobiles, in which National batteries are used, and makes a specialty of batteries for vehicle work. Sales offices of this concern are located in New York, Chicago, Boston and Providence.

Pratt & Whitney Co., 111 Broadway, New York. Novel mailing card, which opens and discloses a number of small pages illustrating and describing the Pratt & Whitney thread milling machine and a number of examples of the work this machine is capable of turning out. The examples consist of screws, spiral gears, worms and the like; an important advantage claimed for the machine is that, unlike the lathe, it does not require the undivided attention of a man; but, on the contrary, a single operative can attend to a number of thread milling machines.



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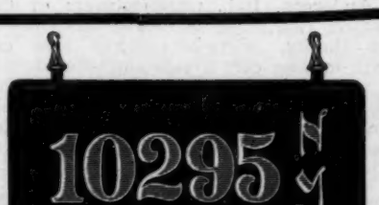

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